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(54) Title: SECRETED EXPRESSED SEQUENCE TAGS (sESTs)

(57) Abstract

Secreted expressed sequence tags (sESTs) isolated from a variety of human tissue sources are provided.

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SECRETED EXPRESSED SEQUENCE TAGS (sESTs)

FIELD OF THE INVENTION

The present invention provides novel polynucleotides which are expressed sequence tags (ESTs) for secreted proteins.

BACKGROUND OF THE INVENTION

Gargantuan efforts have been employed by various investigational projects to randomly sequence portions of naturally-occurring cDNAs. The rationale behind this approach to identification and sequencing genes is founded in two basic principles: (1) that transcribed cDNAs represent the product of the most important genes, namely those that are actually expressed *in vivo*, and (2) that efforts to sequence genes and other portions of the genome of target organisms which are not actually expressed wastes substantial effort on areas not likely to yield genetic information of therapeutic importance. Thus, the high-throughput sequencing efforts focus on only those portions of the genome which are expressed. The randomly produced cDNA sequences represent "expressed sequence tags" or "ESTs", which identify and can be used as probes for the longer, full-length cDNA or genomic sequence from which they were transcribed.

Although this "shortcut" approach to genomic sequencing presents savings of effort compared to sequencing of the complete genome, it still produced a vast array of ESTs which may not be directly useful as protein therapeutics. To date, the majority of protein-related drug discovery has focused on the use of secreted proteins to produce a desired therapeutic effect. Since the EST approach theoretically identifies all expressed proteins, it produces an EST library which contains a mixture of secreted proteins (such as hormones, cytokines and receptors) and non-secreted proteins (such as, for example, metabolic enzymes and cellular structural proteins), without identifying which ESTs correspond to proteins falling into either category. As a result, these methods are not optimally tailored to the needs of investigators searching for secreted proteins because they must separate the secreted "wheat" from the non-secreted "chaff", wasting effort and resources in the process.

Co-assigned U.S. Patent No. 5,536,637, which is incorporated herein by reference, provides methods for focusing genomic sequencing efforts on sequences encoding the secreted proteins which are of most interest for identification of protein therapeutics. The '637 patent discloses a "signal sequence trap" which selectively identifies ESTs for secreted proteins, namely "secreted expressed sequence tags" or "sESTs". It is to these sESTs that the present invention is directed.

SUMMARY OF THE INVENTION

The present invention provides for sESTs isolated from a variety of human RNA/cDNA sources.

In preferred embodiments, the present invention provides an isolated polynucleotide comprising a nucleotide sequence selected from the group consisting of:

SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, SEQ ID NO:14, SEQ ID NO:15, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, SEQ ID NO:24, SEQ ID NO:25, SEQ ID NO:26, SEQ ID NO:27, SEQ ID NO:28, SEQ ID NO:29, SEQ ID NO:30, SEQ ID NO:31, SEQ ID NO:32, SEQ ID NO:33, SEQ ID NO:34, SEQ ID NO:35, SEQ ID NO:36, SEQ ID NO:37, SEQ ID NO:38, SEQ ID NO:39, SEQ ID NO:40, SEQ ID NO:41, SEQ ID NO:42, SEQ ID NO:43, SEQ ID NO:44, SEQ ID NO:45, SEQ ID NO:46, SEQ ID NO:47, SEQ ID NO:48, SEQ ID NO:49, SEQ ID NO:50, SEQ ID NO:51, SEQ ID NO:52, SEQ ID NO:53, SEQ ID NO:54, SEQ ID NO:55, SEQ ID NO:56, SEQ ID NO:57, SEQ ID NO:58, SEQ ID NO:59, SEQ ID NO:60, SEQ ID NO:61, SEQ ID NO:62, SEQ ID NO:63, SEQ ID NO:64, SEQ ID NO:65, SEQ ID NO:66, SEQ ID NO:67, SEQ ID NO:68, SEQ ID NO:69, SEQ ID NO:70, SEQ ID NO:71, SEQ ID NO:72, SEQ ID NO:73, SEQ ID NO:74, SEQ ID NO:75, SEQ ID NO:76, SEQ ID NO:77, SEQ ID NO:78, SEQ ID NO:79, SEQ ID NO:80, SEQ ID NO:81, SEQ ID NO:82, SEQ ID NO:83, SEQ ID NO:84, SEQ ID NO:85, SEQ ID NO:86, SEQ ID NO:87, SEQ ID NO:88, SEQ ID NO:89, SEQ ID NO:90, SEQ ID NO:91, SEQ ID NO:92, SEQ ID NO:93, SEQ ID NO:94, SEQ ID NO:95, SEQ ID NO:96, SEQ ID NO:97, SEQ ID NO:98, SEQ ID NO:99, SEQ ID NO:100, SEQ ID NO:101, SEQ ID NO:102, SEQ ID NO:103, SEQ ID NO:104, SEQ ID NO:105, SEQ ID NO:106, SEQ ID NO:107, SEQ ID NO:108, SEQ ID NO:109, SEQ ID NO:110, SEQ ID NO:111, SEQ ID NO:112, SEQ ID NO:113, SEQ ID NO:114, SEQ ID NO:115, SEQ ID NO:116, SEQ ID NO:117, SEQ ID NO:118, SEQ ID NO:119, SEQ ID NO:120, SEQ ID NO:121, SEQ ID NO:122, SEQ ID NO:123, SEQ ID NO:124, SEQ ID NO:125, SEQ ID NO:126, SEQ ID NO:127, SEQ ID NO:128, SEQ ID NO:129, SEQ ID NO:130, SEQ ID NO:131, SEQ ID NO:132, SEQ ID NO:133, SEQ ID NO:134, SEQ ID NO:135, SEQ ID NO:136,

SEQ ID NO:137, SEQ ID NO:138, SEQ ID NO:139, SEQ ID NO:140, SEQ ID NO:141, SEQ ID NO:142, SEQ ID NO:143, SEQ ID NO:144, SEQ ID NO:145, SEQ ID NO:146, SEQ ID NO:147, SEQ ID NO:148, SEQ ID NO:149, SEQ ID NO:150, SEQ ID NO:151, SEQ ID NO:152, SEQ ID NO:153, SEQ ID NO:154, SEQ ID NO:155, SEQ ID NO:156, SEQ ID NO:157, SEQ ID NO:158, SEQ ID NO:159, SEQ ID NO:160, SEQ ID NO:161, SEQ ID NO:162, SEQ ID NO:163, SEQ ID NO:164, SEQ ID NO:165, SEQ ID NO:166, SEQ ID NO:167, SEQ ID NO:168, SEQ ID NO:169, SEQ ID NO:170, SEQ ID NO:171, SEQ ID NO:172, SEQ ID NO:173, SEQ ID NO:174, SEQ ID NO:175, SEQ ID NO:176, SEQ ID NO:177, SEQ ID NO:178, SEQ ID NO:179, SEQ ID NO:180, SEQ ID NO:181, SEQ ID NO:182, SEQ ID NO:183, SEQ ID NO:184, SEQ ID NO:185, SEQ ID NO:186, SEQ ID NO:187, SEQ ID NO:188, SEQ ID NO:189, SEQ ID NO:190, SEQ ID NO:191, SEQ ID NO:192, SEQ ID NO:193, SEQ ID NO:194, SEQ ID NO:195, SEQ ID NO:196, SEQ ID NO:197, SEQ ID NO:198, SEQ ID NO:199, SEQ ID NO:200, SEQ ID NO:201, SEQ ID NO:202, SEQ ID NO:203, SEQ ID NO:204, SEQ ID NO:205, SEQ ID NO:206, SEQ ID NO:207, SEQ ID NO:208, SEQ ID NO:209, SEQ ID NO:210, SEQ ID NO:211, SEQ ID NO:212, SEQ ID NO:213, SEQ ID NO:214, SEQ ID NO:215, SEQ ID NO:216, SEQ ID NO:217, SEQ ID NO:218, SEQ ID NO:219, SEQ ID NO:220, SEQ ID NO:221, SEQ ID NO:222, SEQ ID NO:223, SEQ ID NO:224, SEQ ID NO:225, SEQ ID NO:226, SEQ ID NO:227, SEQ ID NO:228, SEQ ID NO:229, SEQ ID NO:230, SEQ ID NO:231, SEQ ID NO:232, SEQ ID NO:233, SEQ ID NO:234, SEQ ID NO:235, SEQ ID NO:236, SEQ ID NO:237, SEQ ID NO:238, SEQ ID NO:239, SEQ ID NO:240, SEQ ID NO:241, SEQ ID NO:242, SEQ ID NO:243, SEQ ID NO:244, SEQ ID NO:245, SEQ ID NO:246, SEQ ID NO:247, SEQ ID NO:248, SEQ ID NO:249, SEQ ID NO:250, SEQ ID NO:251, SEQ ID NO:252, SEQ ID NO:253, SEQ ID NO:254, SEQ ID NO:255, SEQ ID NO:256, SEQ ID NO:257, SEQ ID NO:258, SEQ ID NO:259, SEQ ID NO:260, SEQ ID NO:261, SEQ ID NO:262, SEQ ID NO:263, SEQ ID NO:264, SEQ ID NO:265, SEQ ID NO:266, SEQ ID NO:267, SEQ ID NO:268, SEQ ID NO:269, SEQ ID NO:270, SEQ ID NO:271, SEQ ID NO:272, SEQ ID NO:273, SEQ ID NO:274, SEQ ID NO:275, SEQ ID NO:276, SEQ ID NO:277, SEQ ID NO:278, SEQ ID NO:279, SEQ ID NO:280, SEQ ID NO:281, SEQ ID NO:282, SEQ ID NO:283, SEQ ID NO:284, SEQ ID NO:285, SEQ ID NO:286, SEQ ID NO:287, SEQ ID NO:288, SEQ ID NO:289,

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or a complement of said sequence.

In other embodiments, the present invention provides an isolated polynucleotide consisting of a nucleotide sequence selected from the group consisting of:

SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, SEQ ID NO:14, SEQ ID NO:15, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, SEQ ID NO:24, SEQ ID NO:25, SEQ ID NO:26, SEQ ID NO:27, SEQ ID NO:28, SEQ ID NO:29, SEQ ID NO:30, SEQ ID NO:31, SEQ ID NO:32, SEQ ID NO:33, SEQ ID NO:34, SEQ ID NO:35, SEQ ID NO:36, SEQ ID NO:37, SEQ ID NO:38, SEQ ID NO:39, SEQ ID NO:40, SEQ ID NO:41, SEQ ID NO:42, SEQ ID NO:43, SEQ ID NO:44, SEQ ID NO:45, SEQ ID NO:46, SEQ ID NO:47, SEQ ID NO:48, SEQ ID NO:49, SEQ ID NO:50, SEQ ID NO:51, SEQ ID NO:52, SEQ ID NO:53, SEQ ID NO:54, SEQ ID NO:55, SEQ ID NO:56, SEQ ID NO:57, SEQ ID NO:58, SEQ ID NO:59, SEQ ID NO:60, SEQ ID NO:61, SEQ ID NO:62, SEQ ID NO:63, SEQ ID NO:64, SEQ ID NO:65, SEQ ID NO:66, SEQ ID NO:67, SEQ ID NO:68, SEQ ID NO:69, SEQ ID NO:70, SEQ ID NO:71, SEQ ID NO:72, SEQ ID NO:73, SEQ ID NO:74, SEQ ID NO:75, SEQ ID NO:76, SEQ ID NO:77, SEQ ID NO:78, SEQ ID NO:79, SEQ ID NO:80, SEQ ID NO:81, SEQ ID NO:82, SEQ ID NO:83, SEQ ID NO:84, SEQ ID NO:85, SEQ ID NO:86, SEQ ID NO:87, SEQ ID NO:88, SEQ ID NO:89, SEQ ID NO:90, SEQ ID NO:91, SEQ ID NO:92, SEQ ID NO:93, SEQ ID NO:94, SEQ ID NO:95, SEQ ID NO:96, SEQ ID NO:97, SEQ ID NO:98, SEQ ID NO:99, SEQ ID NO:100, SEQ ID NO:101, SEQ ID NO:102, SEQ ID NO:103, SEQ ID NO:104, SEQ ID NO:105, SEQ ID NO:106, SEQ ID NO:107, SEQ ID NO:108, SEQ ID NO:109, SEQ ID NO:110, SEQ ID NO:111, SEQ ID NO:112, SEQ ID NO:113, SEQ ID NO:114, SEQ ID NO:115, SEQ ID NO:116, SEQ ID NO:117, SEQ ID NO:118,

SEQ ID NO:119, SEQ ID NO:120, SEQ ID NO:121, SEQ ID NO:122, SEQ ID NO:123, SEQ ID NO:124, SEQ ID NO:125, SEQ ID NO:126, SEQ ID NO:127, SEQ ID NO:128, SEQ ID NO:129, SEQ ID NO:130, SEQ ID NO:131, SEQ ID NO:132, SEQ ID NO:133, SEQ ID NO:134, SEQ ID NO:135, SEQ ID NO:136, SEQ ID NO:137, SEQ ID NO:138, SEQ ID NO:139, SEQ ID NO:140, SEQ ID NO:141, SEQ ID NO:142, SEQ ID NO:143, SEQ ID NO:144, SEQ ID NO:145, SEQ ID NO:146, SEQ ID NO:147, SEQ ID NO:148, SEQ ID NO:149, SEQ ID NO:150, SEQ ID NO:151, SEQ ID NO:152, SEQ ID NO:153, SEQ ID NO:154, SEQ ID NO:155, SEQ ID NO:156, SEQ ID NO:157, SEQ ID NO:158, SEQ ID NO:159, SEQ ID NO:160, SEQ ID NO:161, SEQ ID NO:162, SEQ ID NO:163, SEQ ID NO:164, SEQ ID NO:165, SEQ ID NO:166, SEQ ID NO:167, SEQ ID NO:168, SEQ ID NO:169, SEQ ID NO:170, SEQ ID NO:171, SEQ ID NO:172, SEQ ID NO:173, SEQ ID NO:174, SEQ ID NO:175, SEQ ID NO:176, SEQ ID NO:177, SEQ ID NO:178, SEQ ID NO:179, SEQ ID NO:180, SEQ ID NO:181, SEQ ID NO:182, SEQ ID NO:183, SEQ ID NO:184, SEQ ID NO:185, SEQ ID NO:186, SEQ ID NO:187, SEQ ID NO:188, SEQ ID NO:189, SEQ ID NO:190, SEQ ID NO:191, SEQ ID NO:192, SEQ ID NO:193, SEQ ID NO:194, SEQ ID NO:195, SEQ ID NO:196, SEQ ID NO:197, SEQ ID NO:198, SEQ ID NO:199, SEQ ID NO:200, SEQ ID NO:201, SEQ ID NO:202, SEQ ID NO:203, SEQ ID NO:204, SEQ ID NO:205, SEQ ID NO:206, SEQ ID NO:207, SEQ ID NO:208, SEQ ID NO:209, SEQ ID NO:210, SEQ ID NO:211, SEQ ID NO:212, SEQ ID NO:213, SEQ ID NO:214, SEQ ID NO:215, SEQ ID NO:216, SEQ ID NO:217, SEQ ID NO:218, SEQ ID NO:219, SEQ ID NO:220, SEQ ID NO:221, SEQ ID NO:222, SEQ ID NO:223, SEQ ID NO:224, SEQ ID NO:225, SEQ ID NO:226, SEQ ID NO:227, SEQ ID NO:228, SEQ ID NO:229, SEQ ID NO:230, SEQ ID NO:231, SEQ ID NO:232, SEQ ID NO:233, SEQ ID NO:234, SEQ ID NO:235, SEQ ID NO:236, SEQ ID NO:237, SEQ ID NO:238, SEQ ID NO:239, SEQ ID NO:240, SEQ ID NO:241, SEQ ID NO:242, SEQ ID NO:243, SEQ ID NO:244, SEQ ID NO:245, SEQ ID NO:246, SEQ ID NO:247, SEQ ID NO:248, SEQ ID NO:249, SEQ ID NO:250, SEQ ID NO:251, SEQ ID NO:252, SEQ ID NO:253, SEQ ID NO:254, SEQ ID NO:255, SEQ ID NO:256, SEQ ID NO:257, SEQ ID NO:258, SEQ ID NO:259, SEQ ID NO:260, SEQ ID NO:261, SEQ ID NO:262, SEQ ID NO:263, SEQ ID NO:264, SEQ ID NO:265, SEQ ID NO:266, SEQ ID NO:267, SEQ ID NO:268, SEQ ID NO:269, SEQ ID NO:270, SEQ ID NO:271,

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NO:2121, SEQ ID NO:2122, SEQ ID NO:2123, SEQ ID NO:2124, SEQ ID NO:2125, SEQ ID NO:2126, SEQ ID NO:2127, SEQ ID NO:2128, SEQ ID NO:2129, SEQ ID NO:2130, SEQ ID NO:2131, SEQ ID NO:2132, SEQ ID NO:2133, SEQ ID NO:2134, SEQ ID NO:2135, SEQ ID NO:2136, SEQ ID NO:2137, SEQ ID NO:2138, SEQ ID NO:2139, SEQ ID NO:2140, SEQ ID NO:2141, SEQ ID NO:2142, SEQ ID NO:2143, SEQ ID NO:2144, SEQ ID NO:2145, SEQ ID NO:2146, SEQ ID NO:2147, SEQ ID NO:2148, SEQ ID NO:2149, SEQ ID NO:2150, SEQ ID NO:2151, SEQ ID NO:2152, SEQ ID NO:2153, SEQ ID NO:2154, SEQ ID NO:2155, SEQ ID NO:2156, SEQ ID NO:2157, SEQ ID NO:2158, SEQ ID NO:2159;

or a complement of said sequence.

In further embodiments, the present invention provides an isolated polynucleotide consisting essentially of a nucleotide sequence selected from the group consisting of:

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NO:2105, SEQ ID NO:2106, SEQ ID NO:2107, SEQ ID NO:2108, SEQ ID NO:2109, SEQ ID NO:2110, SEQ ID NO:2111, SEQ ID NO:2112, SEQ ID NO:2113, SEQ ID NO:2114, SEQ ID NO:2115, SEQ ID NO:2116, SEQ ID NO:2117, SEQ ID NO:2118, SEQ ID NO:2119, SEQ ID NO:2120, SEQ ID NO:2121, SEQ ID NO:2122, SEQ ID NO:2123, SEQ ID NO:2124, SEQ ID NO:2125, SEQ ID NO:2126, SEQ ID NO:2127, SEQ ID NO:2128, SEQ ID NO:2129, SEQ ID NO:2130, SEQ ID NO:2131, SEQ ID NO:2132, SEQ ID NO:2133, SEQ ID NO:2134, SEQ ID NO:2135, SEQ ID NO:2136, SEQ ID NO:2137, SEQ ID NO:2138, SEQ ID NO:2139, SEQ ID NO:2140, SEQ ID NO:2141, SEQ ID NO:2142, SEQ ID NO:2143, SEQ ID NO:2144, SEQ ID NO:2145, SEQ ID NO:2146, SEQ ID NO:2147, SEQ ID NO:2148, SEQ ID NO:2149, SEQ ID NO:2150, SEQ ID NO:2151, SEQ ID NO:2152, SEQ ID NO:2153, SEQ ID NO:2154, SEQ ID NO:2155, SEQ ID NO:2156, SEQ ID NO:2157, SEQ ID NO:2158, SEQ ID NO:2159;

or a complement of said sequence.

In yet other embodiments, the present invention provides an isolated polynucleotide comprising a nucleotide sequence which hybridizes to a sequence selected from the group consisting of:

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NO:2089, SEQ ID NO:2090, SEQ ID NO:2091, SEQ ID NO:2092, SEQ ID NO:2093, SEQ ID NO:2094, SEQ ID NO:2095, SEQ ID NO:2096, SEQ ID NO:2097, SEQ ID NO:2098, SEQ ID NO:2099, SEQ ID NO:2100, SEQ ID NO:2101, SEQ ID NO:2102, SEQ ID NO:2103, SEQ ID NO:2104, SEQ ID NO:2105, SEQ ID NO:2106, SEQ ID NO:2107, SEQ ID NO:2108, SEQ ID NO:2109, SEQ ID NO:2110, SEQ ID NO:2111, SEQ ID NO:2112, SEQ ID NO:2113, SEQ ID NO:2114, SEQ ID NO:2115, SEQ ID NO:2116, SEQ ID NO:2117, SEQ ID NO:2118, SEQ ID NO:2119, SEQ ID NO:2120, SEQ ID NO:2121, SEQ ID NO:2122, SEQ ID NO:2123, SEQ ID NO:2124, SEQ ID NO:2125, SEQ ID NO:2126, SEQ ID NO:2127, SEQ ID NO:2128, SEQ ID NO:2129, SEQ ID NO:2130, SEQ ID NO:2131, SEQ ID NO:2132, SEQ ID NO:2133, SEQ ID NO:2134, SEQ ID NO:2135, SEQ ID NO:2136, SEQ ID NO:2137, SEQ ID NO:2138, SEQ ID NO:2139, SEQ ID NO:2140, SEQ ID NO:2141, SEQ ID NO:2142, SEQ ID NO:2143, SEQ ID NO:2144, SEQ ID NO:2145, SEQ ID NO:2146, SEQ ID NO:2147, SEQ ID NO:2148, SEQ ID NO:2149, SEQ ID NO:2150, SEQ ID NO:2151, SEQ ID NO:2152, SEQ ID NO:2153, SEQ ID NO:2154, SEQ ID NO:2155, SEQ ID NO:2156, SEQ ID NO:2157, SEQ ID NO:2158, SEQ ID NO:2159;

or to a complement of said sequence.

The invention also provides for proteins encoded by the above-described polynucleotides. In certain preferred embodiments, the polynucleotide is operably linked to an expression control sequence. The invention also provides a host cell, including bacterial, yeast, insect and mammalian cells, transformed with such polynucleotide compositions. Also provided by the present invention are organisms that have enhanced, reduced, or modified expression of the gene(s) corresponding to the polynucleotide sequences disclosed herein.

Processes are also provided for producing a protein, which comprise:

(a) growing a culture of the host cell transformed with such polynucleotide compositions in a suitable culture medium; and

(b) purifying the protein from the culture.

The protein produced according to such methods is also provided by the present invention.

Protein compositions of the present invention may further comprise a pharmaceutically acceptable carrier. Compositions comprising an antibody which specifically reacts with such protein are also provided by the present invention.

Methods are also provided for preventing, treating or ameliorating a medical condition which comprises administering to a mammalian subject a therapeutically effective amount of a composition comprising a protein of the present invention, and/or a polynucleotide of the present invention, and a pharmaceutically acceptable carrier.

DETAILED DESCRIPTION

The nucleotide sequences of the sESTs of the present invention are reported in the Sequence Listing below. Table 2 lists the "Clone ID Nos." assigned by applicants to each SEQ ID NO: in the Sequence Listing.

Table 2

Each pair of entries in this table consists of the SEQ ID NO (e.g., 1, 2, etc.) followed by the Clone ID No. for such sequence (e.g., AA239, AA249, etc.).

1	PP85	17	PQ98	33	PT138	49	PT212
2	PP9	18	PR113	34	PT141	50	PT214
3	PP95	19	PR24	35	PT144	51	PT215
4	PP96	20	PR47	36	PT148	52	PT217
5	PQ104	21	PR90	37	PT149	53	PT219
6	PQ109	22	PS46	38	PT150	54	PT228
7	PQ114	23	PS48	39	PT159	55	PT230
8	PQ12	24	PS51	40	PT16	56	PT233
9	PQ134	25	PS59	41	PT171	57	PT249
10	PQ15	26	PS66	42	PT179	58	PT259
11	PQ28	27	PT109	43	PT184	59	PT26
12	PQ29	28	PT11	44	PT189	60	PT268
13	PQ37	29	PT111	45	PT19	61	PT274
14	PQ59	30	PT115	46	PT195	62	PT282
15	PQ74	31	PT118	47	PT2	63	PT284
16	PQ9	32	PT127	48	PT204	64	PT285

65	PT293	99	PT398	133	PU164	167	PV110
66	PT295	100	PT403	134	PU165	168	PV119
67	PT296	101	PT409	135	PU169	169	PV126
68	PT298	102	PT434	136	PU199	170	PV138
69	PT301	103	PT435	137	PU2	171	PV143
70	PT307	104	PT437	138	PU214	172	PV149
71	PT31	105	PT442	139	PU220	173	PV16
72	PT310	106	PT444	140	PU226	174	PV163
73	PT315	107	PT446	141	PU234	175	PV174
74	PT318	108	PT448	142	PU235	176	PV177
75	PT324	109	PT449	143	PU237	177	PV183
76	PT326	110	PT450	144	PU258	178	PV192
77	PT328	111	PT451	145	PU26	179	PV193
78	PT330	112	PT453	146	PU261	180	PV198
79	PT332	113	PT455	147	PU264	181	PV203
80	PT334	114	PT457	148	PU274	182	PV205
81	PT343	115	PT464	149	PU276	183	PV210
82	PT346	116	PT57	150	PU280	184	PV213
83	PT347	117	PT65	151	PU282	185	PV214
84	PT348	118	PT67	152	PU289	186	PV23
85	PT35	119	PT71	153	PU291	187	PV231
86	PT354	120	PT82	154	PU307	188	PV235
87	PT355	121	PT97	155	PU312	189	PV269
88	PT357	122	PU100	156	PU314	190	PV282
89	PT358	123	PU101	157	PU43	191	PV286
90	PT364	124	PU107	158	PU56	192	PV291
91	PT365	125	PU113	159	PU61	193	PV294
92	PT367	126	PU116	160	PU71	194	PV296
93	PT375	127	PU117	161	PU77	195	PV297
94	PT38	128	PU123	162	PU85	196	PV30
95	PT381	129	PU124	163	PU86	197	PV306
96	PT383	130	PU134	164	PU89	198	PV313
97	PT385	131	PU139	165	PU96	199	PV316
98	PT387	132	PU142	166	PV107	200	PV323

201	PV327	235	PV663	269	PW344	303	PW50
202	PV330	236	PV679	270	PW345	304	PW503
203	PV339	237	PV70	271	PW356	305	PW504
204	PV343	238	PV700	272	PW359	306	PW508
205	PV347	239	PV715	273	PW369	307	PW524
206	PV35	240	PV72	274	PW370	308	PW528
207	PV371	241	PV721	275	PW378	309	PW540
208	PV383	242	PV725	276	PW381	310	PW567
209	PV390	243	PW102	277	PW394	311	PW587
210	PV398	244	PW11	278	PW398	312	PW588
211	PV439	245	PW114	279	PW4	313	PW60
212	PV45	246	PW120	280	PW403	314	PW66
213	PV472	247	PW123	281	PW410	315	PW73
214	PV475	248	PW159	282	PW417	316	PW75
215	PV510	249	PW170	283	PW418	317	PW95
216	PV511	250	PW186	284	PW422	318	PX100
217	PV512	251	PW192	285	PW429	319	PX103
218	PV53	252	PW195	286	PW430	320	PX115
219	PV534	253	PW214	287	PW435	321	PX125
220	PV535	254	PW245	288	PW437	322	PX129
221	PV548	255	PW26	289	PW445	323	PX135
222	PV549	256	PW267	290	PW447	324	PX146
223	PV560	257	PW269	291	PW448	325	PX151
224	PV58	258	PW27	292	PW452	326	PX155
225	PV581	259	PW271	293	PW453	327	PX166
226	PV585	260	PW288	294	PW459	328	PX169
227	PV59	261	PW3	295	PW460	329	PX202
228	PV6	262	PW303	296	PW463	330	PX207
229	PV623	263	PW311	297	PW471	331	PX223
230	PV635	264	PW320	298	PW475	332	PX225
231	PV64	265	PW328	299	PW482	333	PX51
232	PV640	266	PW335	300	PW491	334	PX54
233	PV65	267	PW337	301	PW496	335	PX60
234	PV662	268	PW341	302	PW498	336	PX73

337	PX75	371	PZ362	405	QB205	439	QB311
338	PX94	372	PZ388	406	QB208	440	QB32
339	PY10	373	Q13	407	QB211	441	QB326
340	PY133	374	Q153	408	QB212	442	QB344
341	PY156	375	Q172	409	QB214	443	QB360
342	PY16	376	Q303	410	QB216	444	QB370
343	PY184	377	Q513	411	QB217	445	QB375
344	PY187	378	Q66	412	QB22	446	QB379
345	PY195	379	Q691	413	QB221	447	QB389
346	PY202	380	Q719	414	QB232	448	QB39
347	PY215	381	Q725	415	QB235	449	QB393
348	PY220	382	QA133	416	QB24	450	QB395
349	PY239	383	QA136	417	QB241	451	QB397
350	PY251	384	QB10	418	QB242	452	QB401
351	PY254	385	QB120	419	QB245	453	QB405
352	PY256	386	QB122	420	QB246	454	QB44
353	PY260	387	QB131	421	QB25	455	QB56
354	PY27	388	QB132	422	QB251	456	QC109
355	PY34	389	QB135	423	QB252	457	QC113
356	PY38	390	QB136	424	QB254	458	QC12
357	PY39	391	QB146	425	QB257	459	QC126
358	PY40	392	QB149	426	QB259	460	QC133
359	PY46	393	QB152	427	QB26	461	QC146
360	PY54	394	QB153	428	QB264	462	QC147
361	PY7	395	QB164	429	QB271	463	QC152
362	PY9	396	QB165	430	QB280	464	QC156
363	PY97	397	QB184	431	QB282	465	QC16
364	PZ181	398	QB188	432	QB286	466	QC183
365	PZ243	399	QB196	433	QB287	467	QC190
366	PZ300	400	QB199	434	QB289	468	QC199
367	PZ311	401	QB2	435	QB299	469	QC215
368	PZ313	402	QB20	436	QB300	470	QC221
369	PZ331	403	QB200	437	QB301	471	QC226
370	PZ355	404	QB203	438	QB307	472	QC228

473	QC229	507	QC49	541	QD201	575	QF114
474	QC243	508	QC496	542	QD210	576	QF116
475	QC262	509	QC502	543	QD229	577	QF118
476	QC265	510	QC506	544	QD242	578	QF121
477	QC280	511	QC51	545	QD251	579	QF122
478	QC284	512	QC525	546	QD253	580	QF132
479	QC297	513	QC534	547	QD275	581	QF139
480	QC31	514	QC55	548	QD279	582	QF142
481	QC333	515	QC556	549	QD285	583	QF147
482	QC337	516	QC575	550	QD286	584	QF151
483	QC339	517	QC578	551	QD302	585	QF153
484	QC365	518	QC584	552	QD310	586	QF16
485	QC368	519	QC587	553	QD327	587	QF160
486	QC380	520	QC59	554	QD328	588	QF161
487	QC384	521	QC61	555	QD351	589	QF167
488	QC386	522	QC611	556	QD388	590	QF17
489	QC416	523	QC613	557	QD402	591	QF170
490	QC42	524	QC617	558	QD407	592	QF175
491	QC432	525	QC63	559	QD421	593	QF199
492	QC434	526	QC632	560	QD454	594	QF2
493	QC436	527	QC638	561	QD465	595	QF220
494	QC438	528	QC646	562	QD491	596	QF224
495	QC439	529	QC664	563	QD518	597	QF23
496	QC443	530	QC668	564	QD89	598	QF233
497	QC452	531	QC671	565	QD97	599	QF241
498	QC458	532	QC687	566	QE193	600	QF248
499	QC462	533	QC690	567	QE272	601	QF259
500	QC466	534	QC698	568	QE313	602	QF266
501	QC467	535	QC708	569	QE357	603	QF276
502	QC478	536	QC84	570	QE424	604	QF278
503	QC483	537	QD103	571	QF101	605	QF282
504	QC485	538	QD111	572	QF103	606	QF286
505	QC487	539	QD151	573	QF109	607	QF298
506	QC488	540	QD159	574	QF110	608	QF303

609	QF308	643	QF476	677	QF707	711	QG473
610	QF317	644	QF497	678	QF714	712	QG492
611	QF319	645	QF507	679	QF75	713	QG531
612	QF320	646	QF511	680	QF76	714	QG537
613	QF327	647	QF513	681	QF93	715	QG542
614	QF328	648	QF519	682	QF99	716	QG548
615	QF331	649	QF526	683	QG107	717	QG570
616	QF338	650	QF53	684	QG127	718	QG571
617	QF35	651	QF530	685	QG137	719	QG576
618	QF359	652	QF539	686	QG170	720	QG577
619	QF362	653	QF541	687	QG171	721	QG586
620	QF363	654	QF542	688	QG175	722	QG591
621	QF366	655	QF556	689	QG185	723	QG593
622	QF373	656	QF559	690	QG325	724	QG596
623	QF375	657	QF56	691	QG342	725	QG619
624	QF377	658	QF575	692	QG357	726	QG643
625	QF383	659	QF582	693	QG361	727	QH160
626	QF385	660	QF6	694	QG373	728	QH184
627	QF388	661	QF619	695	QG376	729	QH209
628	QF393	662	QF620	696	QG378	730	QH211
629	QF400	663	QF625	697	QG383	731	QH250
630	QF401	664	QF631	698	QG389	732	QH30
631	QF404	665	QF636	699	QG398	733	QH324
632	QF43	666	QF644	700	QG428	734	QH417
633	QF442	667	QF65	701	QG433	735	QH48
634	QF453	668	QF657	702	QG437	736	QH64
635	QF454	669	QF662	703	QG443	737	QL104
636	QF455	670	QF663	704	QG449	738	QL109
637	QF459	671	QF675	705	QG459	739	QL118
638	QF46	672	QF679	706	QG465	740	QL125
639	QF463	673	QF691	707	QG467	741	QL128
640	QF464	674	QF696	708	QG469	742	QL129
641	QF467	675	QF703	709	QG470	743	QL130
642	QF475	676	QF706	710	QG472	744	QL131

745	QL14	779	QO16	813	QS28	847	QU435
746	QL16	780	QO164	814	QS39	848	QU449
747	QL18	781	QO167	815	QS47	849	QU456
748	QL31	782	QO169	816	QS82	850	QU459
749	QL33	783	QO17	817	QS85	851	QU475
750	QL37	784	QO177	818	QT4	852	QU477
751	QL4	785	QO203	819	QT6	853	QU483
752	QL43	786	QO204	820	QU108	854	QU487
753	QL54	787	QO206	821	QU156	855	QU499
754	QL80	788	QO37	822	QU159	856	QU512
755	QL84	789	QO49	823	QU192	857	QU529
756	QL98	790	QO75	824	QU210	858	QU532
757	QM10	791	QO86	825	QU211	859	QU541
758	QM13	792	QO91	826	QU218	860	QU542
759	QM20	793	QR10	827	QU225	861	QU549
760	QM22	794	QR29	828	QU228	862	QU552
761	QM23	795	QR40	829	QU234	863	QU567
762	QM24	796	QR82	830	QU235	864	QU71
763	QM34	797	QR91	831	QU243	865	QU97
764	QM39	798	QS120	832	QU260	866	QU98
765	QM42	799	QS124	833	QU262	867	QV229
766	QM54	800	QS13	834	QU298	868	QV235
767	QM59	801	QS135	835	QU300	869	QV245
768	QM77	802	QS14	836	QU303	870	QV257
769	QM89	803	QS140	837	QU307	871	QV289
770	QN32	804	QS15	838	QU330	872	QV299
771	QN7	805	QS153	839	QU332	873	QV306
772	QO101	806	QS157	840	QU335	874	QV320
773	QO111	807	QS16	841	QU348	875	QV326
774	QO115	808	QS160	842	QU355	876	QV327
775	QO120	809	QS162	843	QU386	877	QV331
776	QO140	810	QS164	844	QU398	878	QV349
777	QO143	811	QS171	845	QU418	879	QV363
778	QO157	812	QS20	846	QU420	880	QV364

881	QV378	915	QY1261	949	QY1496	983	QY26
882	QV391	916	QY1263	950	QY1497	984	QY261
883	QV521	917	QY1268	951	QY15	985	QY266
884	QV530	918	QY1271	952	QY1515	986	QY269
885	QV531	919	QY1285	953	QY1517	987	QY271
886	QV538	920	QY1288	954	QY1555	988	QY277
887	QV549	921	QY129	955	QY1560	989	QY295
888	QX228	922	QY1299	956	QY1561	990	QY3
889	QX233	923	QY1306	957	QY1570	991	QY318
890	QX264	924	QY1309	958	QY1586	992	QY331
891	QX312	925	QY132	959	QY1593	993	QY338
892	QX317	926	QY1327	960	QY1597	994	QY349
893	QX338	927	QY1339	961	QY1608	995	QY356
894	QY100	928	QY1342	962	QY1609	996	QY359
895	QY1013	929	QY1344	963	QY1642	997	QY361
896	QY1042	930	QY1345	964	QY1645	998	QY385
897	QY1065	931	QY1346	965	QY1649	999	QY401
898	QY1068	932	QY1349	966	QY1660	1000	QY426
899	QY1073	933	QY1352	967	QY1662	1001	QY441
900	QY1075	934	QY1358	968	QY1681	1002	QY442
901	QY11	935	QY1361	969	QY1720	1003	QY444
902	QY1102	936	QY1369	970	QY1748	1004	QY448
903	QY1103	937	QY1376	971	QY1750	1005	QY45
904	QY1108	938	QY1379	972	QY1753	1006	QY450
905	QY1141	939	QY138	973	QY1754	1007	QY458
906	QY1175	940	QY1383	974	QY1755	1008	QY471
907	QY1180	941	QY1388	975	QY1756	1009	QY478
908	QY12	942	QY1394	976	QY1775	1010	QY502
909	QY1209	943	QY1418	977	QY1781	1011	QY51
910	QY1215	944	QY1437	978	QY189	1012	QY536
911	QY1221	945	QY1445	979	QY214	1013	QY550
912	QY1224	946	QY1462	980	QY220	1014	QY562
913	QY1256	947	QY1488	981	QY247	1015	QY566
914	QY1259	948	QY1495	982	QY257	1016	QY571

1017	QY593	1051	QZ452	1085	RB448	1119	RB806
1018	QY623	1052	QZ466	1086	RB485	1120	RB81
1019	QY644	1053	QZ484	1087	RB497	1121	RB810
1020	QY704	1054	QZ492	1088	RB513	1122	RB819
1021	QY720	1055	QZ498	1089	RB535	1123	RB822
1022	QY722	1056	RA1018	1090	RB540	1124	RB98
1023	QY740	1057	RA1121	1091	RB541	1125	RC11
1024	QY742	1058	RA138	1092	RB544	1126	RC14
1025	QY746	1059	RA281	1093	RB580	1127	RC21
1026	QY757	1060	RA475	1094	RB619	1128	RC29
1027	QY769	1061	RA562	1095	RB623	1129	RC3
1028	QY798	1062	RA574	1096	RB627	1130	RC37
1029	QY801	1063	RA618	1097	RB630	1131	RC57
1030	QY812	1064	RA726	1098	RB649	1132	RC58
1031	QY823	1065	RA885	1099	RB66	1133	RC60
1032	QY824	1066	RA892	1100	RB666	1134	RC65
1033	QY833	1067	RA900	1101	RB668	1135	RC7
1034	QY835	1068	RA905	1102	RB673	1136	RC76
1035	QY856	1069	RB126	1103	RB674	1137	RD1025
1036	QY859	1070	RB160	1104	RB688	1138	RD1027
1037	QY863	1071	RB164	1105	RB693	1139	RD103
1038	QY87	1072	RB198	1106	RB714	1140	RD1030
1039	QY880	1073	RB202	1107	RB727	1141	RD1039
1040	QY884	1074	RB206	1108	RB738	1142	RD1046
1041	QY89	1075	RB218	1109	RB749	1143	RD1049
1042	QY99	1076	RB231	1110	RB758	1144	RD1054
1043	QZ118	1077	RB312	1111	RB771	1145	RD1058
1044	QZ127	1078	RB313	1112	RB773	1146	RD1059
1045	QZ159	1079	RB342	1113	RB778	1147	RD1068
1046	QZ284	1080	RB382	1114	RB788	1148	RD1073
1047	QZ290	1081	RB40	1115	RB789	1149	RD1094
1048	QZ311	1082	RB409	1116	RB791	1150	RD1101
1049	QZ382	1083	RB419	1117	RB792	1151	RD1102
1050	QZ422	1084	RB422	1118	RB80	1152	RD1109

1153	RD1111	1187	RD542	1221	RD925	1255	RG184
1154	RD1124	1188	RD567	1222	RD942	1256	RG199
1155	RD1131	1189	RD569	1223	RD946	1257	RG200
1156	RD1141	1190	RD59	1224	RD954	1258	RG211
1157	RD1143	1191	RD592	1225	RD959	1259	RG219
1158	RD1147	1192	RD610	1226	RD960	1260	RG241
1159	RD1156	1193	RD616	1227	RD962	1261	RG246
1160	RD1158	1194	RD62	1228	RD966	1262	RG248
1161	RD1168	1195	RD649	1229	RD969	1263	RG272
1162	RD1179	1196	RD652	1230	RD989	1264	RG278
1163	RD1195	1197	RD67	1231	RD996	1265	RG287
1164	RD187	1198	RD680	1232	RD997	1266	RG296
1165	RD194	1199	RD76	1233	RE127	1267	RG299
1166	RD207	1200	RD775	1234	RE133	1268	RG315
1167	RD210	1201	RD778	1235	RE15	1269	RG325
1168	RD214	1202	RD786	1236	RE219	1270	RG33
1169	RD229	1203	RD788	1237	RE257	1271	RG333
1170	RD232	1204	RD792	1238	RE326	1272	RG342
1171	RD252	1205	RD798	1239	RE345	1273	RG348
1172	RD263	1206	RD8	1240	RE365	1274	RG352
1173	RD309	1207	RD807	1241	RE72	1275	RG353
1174	RD310	1208	RD810	1242	RF282	1276	RG367
1175	RD312	1209	RD811	1243	RF439	1277	RG390
1176	RD392	1210	RD825	1244	RF476	1278	RG407
1177	RD432	1211	RD826	1245	RF499	1279	RG409
1178	RD435	1212	RD852	1246	RF84	1280	RG419
1179	RD440	1213	RD853	1247	RG105	1281	RG445
1180	RD456	1214	RD863	1248	RG113	1282	RG447
1181	RD47	1215	RD870	1249	RG133	1283	RG452
1182	RD5	1216	RD876	1250	RG137	1284	RG453
1183	RD517	1217	RD902	1251	RG145	1285	RG473
1184	RD52	1218	RD913	1252	RG158	1286	RG48
1185	RD530	1219	RD917	1253	RG177	1287	RG481
1186	RD539	1220	RD918	1254	RG178	1288	RG482

1289	RG494	1323	RI130	1357	RJ497	1391	RJ897
1290	RG522	1324	RI21	1358	RJ499	1392	RJ898
1291	RG528	1325	RI231	1359	RJ504	1393	RJ900
1292	RG531	1326	RI91	1360	RJ507	1394	RJ903
1293	RG533	1327	RJ118	1361	RJ520	1395	RJ925
1294	RG539	1328	RJ137	1362	RJ525	1396	RJ95
1295	RG555	1329	RJ139	1363	RJ533	1397	RJ952
1296	RG563	1330	RJ150	1364	RJ545	1398	RJ965
1297	RG571	1331	RJ170	1365	RJ552	1399	RK100
1298	RG575	1332	RJ187	1366	RJ601	1400	RK115
1299	RG583	1333	RJ214	1367	RJ652	1401	RK137
1300	RG590	1334	RJ216	1368	RJ653	1402	RK144
1301	RG593	1335	RJ223	1369	RJ656	1403	RK170
1302	RG604	1336	RJ224	1370	RJ7	1404	RK211
1303	RG615	1337	RJ23	1371	RJ713	1405	RK216
1304	RG631	1338	RJ243	1372	RJ719	1406	RK23
1305	RG633	1339	RJ286	1373	RJ724	1407	RK253
1306	RG636	1340	RJ288	1374	RJ727	1408	RK255
1307	RG64	1341	RJ338	1375	RJ731	1409	RK260
1308	RG652	1342	RJ348	1376	RJ742	1410	RK265
1309	RG656	1343	RJ353	1377	RJ749	1411	RK28
1310	RG661	1344	RJ359	1378	RJ777	1412	RK41
1311	RG663	1345	RJ361	1379	RJ779	1413	RK47
1312	RG671	1346	RJ384	1380	RJ781	1414	RK59
1313	RH14	1347	RJ4	1381	RJ792	1415	RK65
1314	RH17	1348	RJ402	1382	RJ8	1416	RK80
1315	RH20	1349	RJ405	1383	RJ813	1417	RL106
1316	RH22	1350	RJ431	1384	RJ828	1418	RL121
1317	RH26	1351	RJ455	1385	RJ85	1419	RL122
1318	RH31	1352	RJ462	1386	RJ859	1420	RL128
1319	RH41	1353	RJ465	1387	RJ870	1421	RL146
1320	RH445	1354	RJ471	1388	RJ874	1422	RL15
1321	RH510	1355	RJ482	1389	RJ890	1423	RL151
1322	RI10	1356	RJ493	1390	RJ891	1424	RL169

1425	RL188	1459	RL862	1493	RT1	1527	RU198
1426	RL19	1460	RL87	1494	RT104	1528	RU199
1427	RL245	1461	RL884	1495	RT11	1529	RU204
1428	RL266	1462	RL885	1496	RT113	1530	RU220
1429	RL295	1463	RL886	1497	RT12	1531	RU233
1430	RL310	1464	RL905	1498	RT120	1532	RU244
1431	RL334	1465	RL957	1499	RT138	1533	RU255
1432	RL336	1466	RL967	1500	RT15	1534	RU286
1433	RL341	1467	RL969	1501	RT16	1535	RU288
1434	RL344	1468	RL979	1502	RT28	1536	RU292
1435	RL356	1469	RM19	1503	RT34	1537	RU294
1436	RL359	1470	RM26	1504	RT40	1538	RU327
1437	RL360	1471	RN14	1505	RT42	1539	RU330
1438	RL379	1472	RN17	1506	RT63	1540	RU333
1439	RL397	1473	RN43	1507	RT69	1541	RU355
1440	RL455	1474	RN46	1508	RT70	1542	RU375
1441	RL465	1475	RN55	1509	RT85	1543	RU388
1442	RL487	1476	RN65	1510	RT88	1544	RU391
1443	RL498	1477	RN75	1511	RT89	1545	RU50
1444	RL52	1478	RN81	1512	RT96	1546	RU71
1445	RL565	1479	RN82	1513	RU11	1547	RU80
1446	RL579	1480	RN85	1514	RU12	1548	RV106
1447	RL606	1481	RP123	1515	RU120	1549	RV122
1448	RL645	1482	RP146	1516	RU13	1550	RV144
1449	RL655	1483	RP161	1517	RU135	1551	RV15
1450	RL693	1484	RP33	1518	RU14	1552	RV175
1451	RL718	1485	RP34	1519	RU140	1553	RV21
1452	RL721	1486	RP57	1520	RU146	1554	RV228
1453	RL743	1487	RP81	1521	RU147	1555	RV239
1454	RL749	1488	RP87	1522	RU15	1556	RV247
1455	RL808	1489	RQ15	1523	RU157	1557	RV252
1456	RL83	1490	RR19	1524	RU172	1558	RV263
1457	RL832	1491	RR20	1525	RU179	1559	RV271
1458	RL840	1492	RS2	1526	RU182	1560	RV296

1561	RV298	1595	RV805	1629	RX205	1663	RX536
1562	RV305	1596	RV880	1630	RX209	1664	RX538
1563	RV310	1597	RV9	1631	RX213	1665	RX554
1564	RV319	1598	RW109	1632	RX22	1666	RX66
1565	RV422	1599	RW123	1633	RX245	1667	RX90
1566	RV465	1600	RW193	1634	RX249	1668	RY140
1567	RV476	1601	RW197	1635	RX252	1669	RY152
1568	RV48	1602	RW253	1636	RX255	1670	RY193
1569	RV49	1603	RW257	1637	RX263	1671	RY24
1570	RV490	1604	RW278	1638	RX282	1672	RY25
1571	RV498	1605	RW290	1639	RX294	1673	RY295
1572	RV504	1606	RW302	1640	RX314	1674	RY297
1573	RV524	1607	RW344	1641	RX322	1675	RY307
1574	RV555	1608	RW38	1642	RX326	1676	RY328
1575	RV576	1609	RW382	1643	RX332	1677	RY35
1576	RV579	1610	RW440	1644	RX363	1678	RY385
1577	RV598	1611	RW447	1645	RX373	1679	RY394
1578	RV612	1612	RW456	1646	RX375	1680	RY418
1579	RV627	1613	RW464	1647	RX392	1681	RY429
1580	RV634	1614	RW480	1648	RX40	1682	RY438
1581	RV635	1615	RW488	1649	RX417	1683	RY450
1582	RV637	1616	RW51	1650	RX419	1684	RY465
1583	RV643	1617	RW513	1651	RX431	1685	RY47
1584	RV656	1618	RW520	1652	RX443	1686	RY471
1585	RV681	1619	RW58	1653	RX466	1687	RY496
1586	RV705	1620	RW661	1654	RX478	1688	RY535
1587	RV707	1621	RW693	1655	RX479	1689	RY551
1588	RV72	1622	RW84	1656	RX487	1690	RY580
1589	RV724	1623	RX127	1657	RX491	1691	RY674
1590	RV759	1624	RX166	1658	RX499	1692	RY675
1591	RV778	1625	RX176	1659	RX510	1693	RY681
1592	RV796	1626	RX18	1660	RX527	1694	RY80
1593	RV801	1627	RX185	1661	RX528	1695	RY81
1594	RV803	1628	RX192	1662	RX534	1696	RZ126

1697	RZ129	1731	SA139	1765	SB15	1799	SC265
1698	RZ142	1732	SA140	1766	SB171	1800	SC271
1699	RZ16	1733	SA323	1767	SB172	1801	SC273
1700	RZ221	1734	SA33	1768	SB20	1802	SC294
1701	RZ224	1735	SA331	1769	SB228	1803	SC296
1702	RZ226	1736	SA34	1770	SB230	1804	SC298
1703	RZ262	1737	SA361	1771	SB236	1805	SC318
1704	RZ304	1738	SA404	1772	SB250	1806	SC341
1705	RZ323	1739	SA481	1773	SB256	1807	SC359
1706	RZ361	1740	SA488	1774	SB276	1808	SC370
1707	RZ405	1741	SA493	1775	SB280	1809	SC382
1708	RZ409	1742	SA508	1776	SB342	1810	SC394
1709	RZ411	1743	SA537	1777	SB36	1811	SC40
1710	RZ425	1744	SA539	1778	SB39	1812	SC401
1711	RZ435	1745	SA543	1779	SB44	1813	SC404
1712	RZ44	1746	SA569	1780	SB49	1814	SC46
1713	RZ454	1747	SA570	1781	SB66	1815	SC58
1714	RZ514	1748	SA576	1782	SB86	1816	SC59
1715	RZ527	1749	SA601	1783	SC115	1817	SC88
1716	RZ553	1750	SA624	1784	SC117	1818	SC89
1717	RZ568	1751	SA627	1785	SC136	1819	SD55
1718	RZ599	1752	SA629	1786	SC144	1820	SE42
1719	RZ610	1753	SA638	1787	SC145	1821	SE71
1720	RZ627	1754	SA643	1788	SC163	1822	SF120
1721	RZ664	1755	SA649	1789	SC164	1823	SF124
1722	RZ670	1756	SA664	1790	SC17	1824	SF125
1723	RZ692	1757	SA679	1791	SC173	1825	SF138
1724	RZ698	1758	SA74	1792	SC176	1826	SF146
1725	RZ730	1759	SA79	1793	SC193	1827	SF156
1726	S1	1760	SB12	1794	SC199	1828	SF172
1727	S199	1761	SB123	1795	SC209	1829	SF173
1728	SA120	1762	SB147	1796	SC226	1830	SF180
1729	SA122	1763	SB148	1797	SC244	1831	SF184
1730	SA124	1764	SB149	1798	SC245	1832	SF206

1833	SF222	1867	SF59	1901	SG352	1935	WG63
1834	SF226	1868	SF592	1902	SG77	1936	WG67
1835	SF240	1869	SF601	1903	T85	1937	WG75
1836	SF245	1870	SF608	1904	V207	1938	WG76
1837	SF249	1871	SF624	1905	V222	1939	WG77
1838	SF265	1872	SF626	1906	WA109	1940	WG9
1839	SF275	1873	SF637	1907	WA118	1941	WG90
1840	SF286	1874	SF67	1908	WA129	1942	WG93
1841	SF292	1875	SF69	1909	WA135	1943	WG94
1842	SF302	1876	SF78	1910	WA15	1944	WH101
1843	SF303	1877	SF98	1911	WA153	1945	WH110
1844	SF307	1878	SG1	1912	WA154	1946	WH113
1845	SF309	1879	SG122	1913	WA545	1947	WH114
1846	SF315	1880	SG124	1914	WC73	1948	WH117
1847	SF339	1881	SG126	1915	WC74	1949	WH119
1848	SF34	1882	SG127	1916	WC88	1950	WH120
1849	SF340	1883	SG148	1917	WF2	1951	WH128
1850	SF348	1884	SG15	1918	WF3	1952	WH129
1851	SF371	1885	SG169	1919	WF4	1953	WH13
1852	SF379	1886	SG213	1920	WG14	1954	WH130
1853	SF401	1887	SG243	1921	WG21	1955	WH133
1854	SF429	1888	SG261	1922	WG24	1956	WH135
1855	SF442	1889	SG262	1923	WG26	1957	WH140
1856	SF444	1890	SG272	1924	WG30	1958	WH142
1857	SF445	1891	SG275	1925	WG31	1959	WH146
1858	SF465	1892	SG281	1926	WG32	1960	WH150
1859	SF472	1893	SG293	1927	WG34	1961	WH155
1860	SF497	1894	SG295	1928	WG39	1962	WH16
1861	SF499	1895	SG312	1929	WG41	1963	WH169
1862	SF50	1896	SG334	1930	WG44	1964	WH17
1863	SF517	1897	SG335	1931	WG53	1965	WH170
1864	SF553	1898	SG345	1932	WG55	1966	WH175
1865	SF577	1899	SG347	1933	WG59	1967	WH178
1866	SF582	1900	SG35	1934	WG62	1968	WH179

1969	WH180	2003	WI143	2037	WJ200	2071	WL554
1970	WH181	2004	WI144	2038	WJ202	2072	WL556
1971	WH185	2005	WI145	2039	WJ231	2073	WL560
1972	WH200	2006	WI150	2040	WJ233	2074	WL561
1973	WH204	2007	WI152	2041	WJ236	2075	WL566
1974	WH209	2008	WI156	2042	WJ238	2076	WL567
1975	WH211	2009	WI168	2043	WJ243	2077	WL570
1976	WH214	2010	WI173	2044	WJ245	2078	WL580
1977	WH216	2011	WI175	2045	WJ248	2079	WL582
1978	WH219	2012	WI178	2046	WJ275	2080	WL637
1979	WH22	2013	WI18	2047	WJ289	2081	WL644
1980	WH224	2014	WI181	2048	WJ291	2082	WL647
1981	WH230	2015	WI232	2049	WJ295	2083	WL657
1982	WH26	2016	WI233	2050	WJ296	2084	WL663
1983	WH27	2017	WI234	2051	WJ301	2085	WL664
1984	WH3	2018	WI239	2052	WK159	2086	WL666
1985	WH30	2019	WI243	2053	WK168	2087	Z107
1986	WH39	2020	WI244	2054	WK172	2088	Z123
1987	WH40	2021	WI246	2055	WK174	2089	Z132
1988	WH43	2022	WI248	2056	WK177	2090	Z134
1989	WH44	2023	WI251	2057	WK178	2091	Z135
1990	WH47	2024	WI257	2058	WK185	2092	Z139
1991	WI1	2025	WI265	2059	WK199	2093	Z145
1992	WI108	2026	WI266	2060	WK200	2094	Z217
1993	WI109	2027	WI267	2061	WK215	2095	Z218
1994	WI114	2028	WI268	2062	WK220	2096	Z243
1995	WI116	2029	WI270	2063	WK225	2097	Z250
1996	WI119	2030	WI44	2064	WK228	2098	Z253
1997	WI12	2031	WI9	2065	WK234	2099	Z254
1998	WI125	2032	WI96	2066	WK247	2100	Z256
1999	WI13	2033	WJ168	2067	WL503	2101	Z260
2000	WI131	2034	WJ176	2068	WL508	2102	Z286
2001	WI139	2035	WJ192	2069	WL519	2103	Z287
2002	WI142	2036	WJ193	2070	WL546	2104	Z288

2105	Z294	2139	Z729
2106	Z320	2140	Z738
2107	Z327	2141	Z743
2108	Z328	2142	Z747
2109	Z338	2143	Z748
2110	Z343	2144	Z749
2111	Z372	2145	Z750
2112	Z391	2146	Z756
2113	Z415	2147	Z768
2114	Z450	2148	Z769
2115	Z459	2149	Z792
2116	Z469	2150	Z805
2117	Z480	2151	Z806
2118	Z497	2152	Z837
2119	Z504	2153	Z843
2120	Z577	2154	Z847
2121	Z584	2155	Z852
2122	Z590	2156	Z856
2123	Z594	2157	Z864
2124	Z599	2158	Z865
2125	Z603	2159	Z871
2126	Z607		
2127	Z610		
2128	Z617		
2129	Z624		
2130	Z631		
2131	Z633		
2132	Z654		
2133	Z656		
2134	Z660		
2135	Z666		
2136	Z674		
2137	Z677		
2138	Z719		

The "Clone ID No." for a particular clone consists of one or two letters followed by a number. The letters designate the tissue source from which the sEST was isolated. Table 3 below lists the various sources which were run through applicants' signal sequence trap. Thus, the tissue source for a particular sEST sequence can be identified in Table 3 by the one and two letter designations used in the relevant "Clone ID No." in Table 2. For example, a clone designated as "PP85" would have been isolated from a human adult blood (lymphoblastic leukemia MOLT-4) library (i.e., selection "PP") as indicated in Table 3.

As used herein, "polynucleotide" includes single- and double-stranded RNAs, DNAs and RNA:DNA hybrids.

As used herein a "secreted" protein is one which, when expressed in a suitable host cell, is transported across or through a membrane, including transport as a result of signal sequences in its amino acid sequence. "Secreted" proteins include without limitation proteins secreted wholly (e.g., soluble proteins) or partially (e.g., receptors) from the cell in which they are expressed. "Secreted" proteins also include without limitation proteins which are transported across the membrane of the endoplasmic reticulum.

Fragments of the proteins of the present invention which are capable of exhibiting biological activity are also encompassed by the present invention. Fragments of the protein may be in linear form or they may be cyclized using known methods, for example, as described in H.U. Saragovi, *et al.*, Bio/Technology 10, 773-778 (1992) and in R.S. McDowell, *et al.*, J. Amer. Chem. Soc. 114, 9245-9253 (1992), both of which are incorporated herein by reference. Such fragments may be fused to carrier molecules such as immunoglobulins for many purposes, including increasing the valency of protein binding sites. For example, fragments of the protein may be fused through "linker" sequences to the Fc portion of an immunoglobulin. For a bivalent form of the protein, such a fusion could be to the Fc portion of an IgG molecule. Other immunoglobulin isotypes may also be used to generate such fusions. For example, a protein - IgM fusion would generate a decavalent form of the protein of the invention.

The present invention also provides both full-length and mature forms of the disclosed proteins. The full-length form of the such proteins is identified in the sequence listing by translation of the nucleotide sequence of each disclosed clone. The mature form(s) of such protein may be obtained by expression of the disclosed

full-length polynucleotide (preferably those deposited with ATCC) in a suitable mammalian cell or other host cell. The sequence(s) of the mature form(s) of the protein may also be determinable from the amino acid sequence of the full-length form.

The present invention also provides genes corresponding to the polynucleotide sequences disclosed herein. "Corresponding genes" are the regions of the genome that are transcribed to produce the mRNAs from which cDNA polynucleotide sequences are derived and may include contiguous regions of the genome necessary for the regulated expression of such genes. Corresponding genes may therefore include but are not limited to coding sequences, 5' and 3' untranslated regions, alternatively spliced exons, introns, promoters, enhancers, and silencer or suppressor elements. The corresponding genes can be isolated in accordance with known methods using the sequence information disclosed herein. Such methods include the preparation of probes or primers from the disclosed sequence information for identification and/or amplification of genes in appropriate genomic libraries or other sources of genomic materials. An "isolated gene" is a gene that has been separated from the adjacent coding sequences, if any, present in the genome of the organism from which the gene was isolated.

The chromosomal location corresponding to the polynucleotide sequences disclosed herein may also be determined, for example by hybridizing appropriately labeled polynucleotides of the present invention to chromosomes *in situ*. It may also be possible to determine the corresponding chromosomal location for a disclosed polynucleotide by identifying significantly similar nucleotide sequences in public databases, such as expressed sequence tags (ESTs), that have already been mapped to particular chromosomal locations. For at least some of the polynucleotide sequences disclosed herein, public database sequences having at least some similarity to the polynucleotide of the present invention have been listed by database accession number. Searches using the GenBank accession numbers of these public database sequences can then be performed at an Internet site provided by the National Center for Biotechnology Information having the address www.ncbi.nlm.nih.gov/UniGene, in order to identify "UniGene clusters" of overlapping sequences. Many of the "UniGene clusters" so identified will already have been mapped to particular chromosomal sites.

Organisms that have enhanced, reduced, or modified expression of the gene(s) corresponding to the polynucleotide sequences disclosed herein are provided. The desired change in gene expression can be achieved through the use of antisense polynucleotides or ribozymes that bind and/or cleave the mRNA transcribed from the gene (Albert and Morris, 1994, *Trends Pharmacol. Sci.* **15(7)**: 250-254; Lavarosky *et al.*, 1997, *Biochem. Mol. Med.* **62(1)**: 11-22; and Hampel, 1998, *Prog. Nucleic Acid Res. Mol. Biol.* **58**: 1-39; all of which are incorporated by reference herein). Transgenic animals that have multiple copies of the gene(s) corresponding to the polynucleotide sequences disclosed herein, preferably produced by transformation of cells with genetic constructs that are stably maintained within the transformed cells and their progeny, are provided. Transgenic animals that have modified genetic control regions that increase or reduce gene expression levels, or that change temporal or spatial patterns of gene expression, are also provided (see European Patent No. 0 649 464 B1, incorporated by reference herein). In addition, organisms are provided in which the gene(s) corresponding to the polynucleotide sequences disclosed herein have been partially or completely inactivated, through insertion of extraneous sequences into the corresponding gene(s) or through deletion of all or part of the corresponding gene(s). Partial or complete gene inactivation can be accomplished through insertion, preferably followed by imprecise excision, of transposable elements (Plasterk, 1992, *Bioessays* **14(9)**: 629-633; Zwaal *et al.*, 1993, *Proc. Natl. Acad. Sci. USA* **90(16)**: 7431-7435; Clark *et al.*, 1994, *Proc. Natl. Acad. Sci. USA* **91(2)**: 719-722; all of which are incorporated by reference herein), or through homologous recombination, preferably detected by positive/negative genetic selection strategies (Mansour *et al.*, 1988, *Nature* **336**: 348-352; U.S. Patent Nos. 5,464,764; 5,487,992; 5,627,059; 5,631,153; 5,614, 396; 5,616,491; and 5,679,523; all of which are incorporated by reference herein). These organisms with altered gene expression are preferably eukaryotes and more preferably are mammals. Such organisms are useful for the development of non-human models for the study of disorders involving the corresponding gene(s), and for the development of assay systems for the identification of molecules that interact with the protein product(s) of the corresponding gene(s).

Where the protein of the present invention is membrane-bound (e.g., is a receptor), the present invention also provides for soluble forms of such protein. In such forms part or all of the intracellular and transmembrane domains of the protein

are deleted such that the protein is fully secreted from the cell in which it is expressed. The intracellular and transmembrane domains of proteins of the invention can be identified in accordance with known techniques for determination of such domains from sequence information.

Proteins and protein fragments of the present invention include proteins with amino acid sequence lengths that are at least 25%(more preferably at least 50%, and most preferably at least 75%) of the length of a disclosed protein and have at least 60% sequence identity (more preferably, at least 75% identity; most preferably at least 90% or 95% identity) with that disclosed protein, where sequence identity is determined by comparing the amino acid sequences of the proteins when aligned so as to maximize overlap and identity while minimizing sequence gaps. Also included in the present invention are proteins and protein fragments that contain a segment preferably comprising 8 or more (more preferably 20 or more, most preferably 30 or more) contiguous amino acids that shares at least 75% sequence identity (more preferably, at least 85% identity; most preferably at least 95% identity) with any such segment of any of the disclosed proteins.

In particular, sequence identity may be determined using WU-BLAST (Washington University BLAST) version 2.0 software, which builds upon WU-BLAST version 1.4, which in turn is based on the public domain NCBI-BLAST version 1.4 (Altschul and Gish, 1996, Local alignment statistics, Doolittle *ed.*, *Methods in Enzymology* **266**: 460-480; Altschul *et al.*, 1990, Basic local alignment search tool, *Journal of Molecular Biology* **215**: 403-410; Gish and States, 1993, Identification of protein coding regions by database similarity search, *Nature Genetics* **3**: 266-272; Karlin and Altschul, 1993, Applications and statistics for multiple high-scoring segments in molecular sequences, *Proc. Natl. Acad. Sci. USA* **90**: 5873-5877; all of which are incorporated by reference herein). WU-BLAST version 2.0 executable programs for several UNIX platforms can be downloaded from the Internet file-transfer protocol (FTP) site ftp://blast.wustl.edu/blast/executables. The complete suite of search programs (BLASTP, BLASTN, BLASTX, TBLASTN, and TBLASTX) is provided at that site, in addition to several support programs. WU-BLAST 2.0 is copyrighted and may not be sold or redistributed in any form or manner without the express written consent of the author; but the posted executables

may otherwise be freely used for commercial, nonprofit, or academic purposes. In all search programs in the suite -- BLASTP, BLASTN, BLASTX, TBLASTN and TBLASTX -- the gapped alignment routines are integral to the database search itself, and thus yield much better sensitivity and selectivity while producing the more easily interpreted output. Gapping can optionally be turned off in all of these programs, if desired. The default penalty (Q) for a gap of length one is Q=9 for proteins and BLASTP, and Q=10 for BLASTN, but may be changed to any integer value including zero, one through eight, nine, ten, eleven, twelve through twenty, twenty-one through fifty, fifty-one through one hundred, etc. The default per-residue penalty for extending a gap (R) is R=2 for proteins and BLASTP, and R=10 for BLASTN, but may be changed to any integer value including zero, one, two, three, four, five, six, seven, eight, nine, ten, eleven, twelve through twenty, twenty-one through fifty, fifty-one through one hundred, etc. Any combination of values for Q and R can be used in order to align sequences so as to maximize overlap and identity while minimizing sequence gaps. The default amino acid comparison matrix is BLOSUM62, but other amino acid comparison matrices such as PAM can be utilized.

Species homologues of the disclosed polynucleotides and proteins are also provided by the present invention. As used herein, a "species homologue" is a protein or polynucleotide with a different species of origin from that of a given protein or polynucleotide, but with significant sequence similarity to the given protein or polynucleotide. Preferably, polynucleotide species homologues have at least 60% sequence identity (more preferably, at least 75% identity; most preferably at least 90% identity) with the given polynucleotide, and protein species homologues have at least 30% sequence identity (more preferably, at least 45% identity; most preferably at least 60% identity) with the given protein, where sequence identity is determined by comparing the nucleotide sequences of the polynucleotides or the amino acid sequences of the proteins when aligned so as to maximize overlap and identity while minimizing sequence gaps. Species homologues may be isolated and identified by making suitable probes or primers from the sequences provided herein and screening a suitable nucleic acid source from the desired species. Preferably, species homologues are those isolated from mammalian species. Most preferably, species homologues are those isolated from certain mammalian species such as, for example,

Pan troglodytes, Gorilla gorilla, Pongo pygmaeus, Hylobates concolor, Macaca mulatta, Papio papio, Papio hamadryas, Cercopithecus aethiops, Cebus capucinus, Aotus trivirgatus, Sanguinus oedipus, Microcebus murinus, Mus musculus, Rattus norvegicus, Cricetulus griseus, Felis catus, Mustela vison, Canis familiaris, Oryctolagus cuniculus, Bos taurus, Ovis aries, Sus scrofa, and *Equus caballus,* for which genetic maps have been created allowing the identification of syntenic relationships between the genomic organization of genes in one species and the genomic organization of the related genes in another species (O'Brien and Seuánez, 1988, *Ann. Rev. Genet.* **22**: 323-351; O'Brien *et al.*, 1993, *Nature Genetics* 3:103-112; Johansson *et al.*, 1995, *Genomics* **25**: 682-690; Lyons *et al.*, 1997, *Nature Genetics* **15**: 47-56; O'Brien *et al.*, 1997, *Trends in Genetics* **13(10)**: 393-399; Carver and Stubbs, 1997, *Genome Research* 7:1123-1137; all of which are incorporated by reference herein).

The invention also encompasses allelic variants of the disclosed polynucleotides or proteins; that is, naturally-occurring alternative forms of the isolated polynucleotides which also encode proteins which are identical or have significantly similar sequences to those encoded by the disclosed polynucleotides. Preferably, allelic variants have at least 60% sequence identity (more preferably, at least 75% identity; most preferably at least 90% identity) with the given polynucleotide, where sequence identity is determined by comparing the nucleotide sequences of the polynucleotides when aligned so as to maximize overlap and identity while minimizing sequence gaps. Allelic variants may be isolated and identified by making suitable probes or primers from the sequences provided herein and screening a suitable nucleic acid source from individuals of the appropriate species.

The invention also includes polynucleotides with sequences complementary to those of the polynucleotides disclosed herein.

The present invention also includes polynucleotides that hybridize under reduced stringency conditions, more preferably stringent conditions, and most preferably highly stringent conditions, to polynucleotides described herein. Examples of stringency conditions are shown in the table below: highly stringent conditions are those that are at least as stringent as, for example, conditions A-F; stringent conditions are at least as stringent as, for example, conditions G-L; and reduced stringency conditions are at least as stringent as, for example, conditions M-R.

Stringency Condition	Polynucleotide Hybrid	Hybrid Length (bp)[‡]	Hybridization Temperature and Buffer[†]	Wash Temperature and Buffer[†]
A	DNA:DNA	≥ 50	65°C; 1xSSC -or- 42°C; 1xSSC, 50% formamide	65°C; 0.3xSSC
B	DNA:DNA	<50	T_B*; 1xSSC	T_B*; 1xSSC
C	DNA:RNA	≥ 50	67°C; 1xSSC -or- 45°C; 1xSSC, 50% formamide	67°C; 0.3xSSC
D	DNA:RNA	<50	T_D*; 1xSSC	T_D*; 1xSSC
E	RNA:RNA	≥ 50	70°C; 1xSSC -or- 50°C; 1xSSC, 50% formamide	70°C; 0.3xSSC
F	RNA:RNA	<50	T_F*; 1xSSC	T_F*; 1xSSC
G	DNA:DNA	≥ 50	65°C; 4xSSC -or- 42°C; 4xSSC, 50% formamide	65°C; 1xSSC
H	DNA:DNA	<50	T_H*; 4xSSC	T_H*; 4xSSC
I	DNA:RNA	≥ 50	67°C; 4xSSC -or- 45°C; 4xSSC, 50% formamide	67°C; 1xSSC
J	DNA:RNA	<50	T_J*; 4xSSC	T_J*; 4xSSC
K	RNA:RNA	≥ 50	70°C; 4xSSC -or- 50°C; 4xSSC, 50% formamide	67°C; 1xSSC
L	RNA:RNA	<50	T_L*; 2xSSC	T_L*; 2xSSC
M	DNA:DNA	≥ 50	50°C; 4xSSC -or- 40°C; 6xSSC, 50% formamide	50°C; 2xSSC
N	DNA:DNA	<50	T_N*; 6xSSC	T_N*; 6xSSC
O	DNA:RNA	≥ 50	55°C; 4xSSC -or- 42°C; 6xSSC, 50% formamide	55°C; 2xSSC
P	DNA:RNA	<50	T_P*; 6xSSC	T_P*; 6xSSC
Q	RNA:RNA	≥ 50	60°C; 4xSSC -or- 45°C; 6xSSC, 50% formamide	60°C; 2xSSC
R	RNA:RNA	<50	T_R*; 4xSSC	T_R*; 4xSSC

‡: The hybrid length is that anticipated for the hybridized region(s) of the hybridizing polynucleotides. When hybridizing a polynucleotide to a target polynucleotide of unknown sequence, the hybrid length is assumed to be that of the hybridizing polynucleotide. When polynucleotides of known sequence are hybridized, the hybrid length can be determined by aligning the sequences of the polynucleotides and identifying the region or regions of optimal sequence complementarity.

†: SSPE (1xSSPE is 0.15M NaCl, 10mM NaH_2PO_4, and 1.25mM EDTA, pH 7.4) can be substituted for SSC (1xSSC is 0.15M NaCl and 15mM sodium citrate) in the hybridization and wash buffers; washes are performed for 15 minutes after hybridization is complete.

*T_B - T_R: The hybridization temperature for hybrids anticipated to be less than 50 base pairs in length should be 5-10°C less than the melting temperature (T_m) of the hybrid, where T_m is determined according to the following equations. For hybrids less than 18 base pairs in length, T_m(°C) = 2(# of A + T bases) + 4(# of G + C bases). For hybrids between 18 and 49 base

pairs in length, $T_m(^\circ C) = 81.5 + 16.6(\log_{10}[Na^+]) + 0.41(\%G+C) - (600/N)$, where N is the number of bases in the hybrid, and $[Na^+]$ is the concentration of sodium ions in the hybridization buffer ($[Na^+]$ for 1xSSC = 0.165 M).

Additional examples of stringency conditions for polynucleotide hybridization are provided in Sambrook, J., E.F. Fritsch, and T. Maniatis, 1989, *Molecular Cloning: A Laboratory Manual*, Cold Spring Harbor Laboratory Press, Cold Spring Harbor, NY, chapters 9 and 11, and *Current Protocols in Molecular Biology*, 1995, F.M. Ausubel et al., eds., John Wiley & Sons, Inc., sections 2.10 and 6.3-6.4, incorporated herein by reference.

Preferably, each such hybridizing polynucleotide has a length that is at least 25%(more preferably at least 50%, and most preferably at least 75%) of the length of the polynucleotide of the present invention to which it hybridizes, and has at least 60% sequence identity (more preferably, at least 75% identity; most preferably at least 90% or 95% identity) with the polynucleotide of the present invention to which it hybridizes, where sequence identity is determined by comparing the sequences of the hybridizing polynucleotides when aligned so as to maximize overlap and identity while minimizing sequence gaps.

The isolated polynucleotide of the invention may contain sequences at its 5' and/or 3' end that are derived from linker, polylinker, or multiple cloning site sequences commonly found in vectors such as the pMT2 or pED expression vectors (see below). For example, sequences such as SEQ ID NO:2160, SEQ ID NO:2161, or SEQ ID NO:2162 may be found at the 5' end of an isolated polynucleotide of the invention, or the complement of any of these sequences may be found at its 3' end. Similarly, sequences such as SEQ ID NO:2163, SEQ ID NO:2164, or SEQ ID NO:2165 may be found at the 3' end of an isolated polynucleotide of the invention, or the complement of any of these sequences may be found at its 5' end. In addition, variants of these linker sequences may be present in isolated polynucleotides of the invention, which linker variants vary from SEQ ID NO:2160 through SEQ ID NO:2165 by the alteration, insertion, or deletion of one or more nucleotides. Therefore, a preferred embodiment of the invention comprises the nucleotide sequence of any of the isolated polynucleotides disclosed herein, beginning at nucleotide 25 and ending at nucleotide (N-25) of the SEQ ID NO for that polynucleotide, where N represents the total number of nucleotides in the sequence. As a specific example, a preferred embodiment of the invention comprises the nucleotide sequence of SEQ ID NO:1

from nucleotide 25 to nucleotide 180, where the total number of nucleotides (N) in SEQ ID NO:1 is 205, and N-25 equals 180. More preferably, a polynucleotide of the invention comprises the nucleotide sequence of any of the isolated polynucleotides disclosed herein, beginning at nucleotide 30 and ending at nucleotide (N-30) of the SEQ ID NO for that polynucleotide. Most preferably, a polynucleotide of the invention comprises the nucleotide sequence of any of the isolated polynucleotides disclosed herein, beginning at nucleotide 35 and ending at nucleotide (N-35) of the SEQ ID NO for that polynucleotide.

The isolated polynucleotide of the invention may be operably linked to an expression control sequence such as the pMT2 or pED expression vectors disclosed in Kaufman *et al.*, Nucleic Acids Res. 19, 4485-4490 (1991), in order to produce the protein recombinantly. Many suitable expression control sequences are known in the art. General methods of expressing recombinant proteins are also known and are exemplified in R. Kaufman, Methods in Enzymology 185, 537-566 (1990). As defined herein "operably linked" means that the isolated polynucleotide of the invention and an expression control sequence are situated within a vector or cell in such a way that the protein is expressed by a host cell which has been transformed (transfected) with the ligated polynucleotide/expression control sequence.

A number of types of cells may act as suitable host cells for expression of the protein. Mammalian host cells include, for example, monkey COS cells, Chinese Hamster Ovary (CHO) cells, human kidney 293 cells, human epidermal A431 cells, human Colo205 cells, 3T3 cells, CV-1 cells, other transformed primate cell lines, normal diploid cells, cell strains derived from in vitro culture of primary tissue, primary explants, HeLa cells, mouse L cells, BHK, HL-60, U937, HaK or Jurkat cells.

Alternatively, it may be possible to produce the protein in lower eukaryotes such as yeast or in prokaryotes such as bacteria. Potentially suitable yeast strains include *Saccharomyces cerevisiae*, *Schizosaccharomyces pombe*, *Kluyveromyces* strains, *Candida*, or any yeast strain capable of expressing heterologous proteins. Potentially suitable bacterial strains include *Escherichia coli*, *Bacillus subtilis*, *Salmonella typhimurium*, or any bacterial strain capable of expressing heterologous proteins. If the protein is made in yeast or bacteria, it may be necessary to modify the protein produced therein, for example by phosphorylation or glycosylation of the appropriate sites, in order to obtain the functional protein. Such covalent attachments may be accomplished using known chemical or enzymatic methods.

The protein may also be produced by operably linking the isolated polynucleotide of the invention to suitable control sequences in one or more insect expression vectors, and employing an insect expression system. Materials and methods for baculovirus/insect cell expression systems are commercially available in kit form from, *e.g.*, Invitrogen, San Diego, California, U.S.A. (the MaxBac® kit), and such methods are well known in the art, as described in Summers and Smith, Texas Agricultural Experiment Station Bulletin No. 1555 (1987), incorporated herein by reference. As used herein, an insect cell capable of expressing a polynucleotide of the present invention is "transformed."

The protein of the invention may be prepared by culturing transformed host cells under culture conditions suitable to express the recombinant protein. The resulting expressed protein may then be purified from such culture (i.e., from culture medium or cell extracts) using known purification processes, such as gel filtration and ion exchange chromatography. The purification of the protein may also include an affinity column containing agents which will bind to the protein; one or more column steps over such affinity resins as concanavalin A-agarose, heparin-toyopearl® or Cibacrom blue 3GA Sepharose®; one or more steps involving hydrophobic interaction chromatography using such resins as phenyl ether, butyl ether, or propyl ether; or immunoaffinity chromatography.

Alternatively, the protein of the invention may also be expressed in a form which will facilitate purification. For example, it may be expressed as a fusion protein, such as those of maltose binding protein (MBP), glutathione-S-transferase (GST) or thioredoxin (TRX). Kits for expression and purification of such fusion proteins are commercially available from New England BioLabs (Beverly, MA), Pharmacia (Piscataway, NJ) and Invitrogen Corporation (Carlsbad, CA), respectively. The protein can also be tagged with an epitope and subsequently purified by using a specific antibody directed to such epitope. One such epitope ("Flag") is commercially available from the Eastman Kodak Company (New Haven, CT).

Finally, one or more reverse-phase high performance liquid chromatography (RP-HPLC) steps employing hydrophobic RP-HPLC media, e.g., silica gel having pendant methyl or other aliphatic groups, can be employed to further purify the protein. Some or all of the foregoing purification steps, in various combinations, can also be employed to provide a substantially homogeneous isolated recombinant

protein. The protein thus purified is substantially free of other mammalian proteins and is defined in accordance with the present invention as an "isolated protein."

The protein of the invention may also be expressed as a product of transgenic animals, e.g., as a component of the milk of transgenic cows, goats, pigs, or sheep which are characterized by somatic or germ cells containing a nucleotide sequence encoding the protein.

The protein may also be produced by known conventional chemical synthesis. Methods for constructing the proteins of the present invention by synthetic means are known to those skilled in the art. The synthetically-constructed protein sequences, by virtue of sharing primary, secondary or tertiary structural and/or conformational characteristics with proteins may possess biological properties in common therewith, including protein activity. Thus, they may be employed as biologically active or immunological substitutes for natural, purified proteins in screening of therapeutic compounds and in immunological processes for the development of antibodies.

The proteins provided herein also include proteins characterized by amino acid sequences similar to those of purified proteins but into which modification are naturally provided or deliberately engineered. For example, modifications in the peptide or DNA sequences can be made by those skilled in the art using known techniques. Modifications of interest in the protein sequences may include the alteration, substitution, replacement, insertion or deletion of a selected amino acid residue in the coding sequence. For example, one or more of the cysteine residues may be deleted or replaced with another amino acid to alter the conformation of the molecule. Techniques for such alteration, substitution, replacement, insertion or deletion are well known to those skilled in the art (see, e.g., U.S. Patent No. 4,518,584). Preferably, such alteration, substitution, replacement, insertion or deletion retains the desired activity of the protein.

Other fragments and derivatives of the sequences of proteins which would be expected to retain protein activity in whole or in part and may thus be useful for screening or other immunological methodologies may also be easily made by those skilled in the art given the disclosures herein. Such modifications are believed to be encompassed by the present invention.

USES AND BIOLOGICAL ACTIVITY

The polynucleotides and proteins of the present invention are expected to exhibit one or more of the uses or biological activities (including those associated with assays cited herein) identified below. Uses or activities described for proteins of the present invention may be provided by administration or use of such proteins or by administration or use of polynucleotides encoding such proteins (such as, for example, in gene therapies or vectors suitable for introduction of DNA).

Research Uses and Utilities

The polynucleotides provided by the present invention can be used by the research community for various purposes. The primary use of polynucleotides of the invention which are sESTs is as porbes for the identification and isolation of full-length cDNAs and genomic DNA molecules which correspond (i.e., is a longer polynucleotide sequence of which substantially the entire sEST is a fragment in the case of a full-length cDNA, or which encodes the sEST in the case of a genomic DNA molecule) to such sESTs. Techniques for use of such sequences as probes for larger cDNAs or genomic molecules are well known in the art.

The polynucleotides can also be used to express recombinant protein for analysis, characterization or therapeutic use; as markers for tissues in which the corresponding protein is preferentially expressed (either constitutively or at a particular stage of tissue differentiation or development or in disease states); as molecular weight markers on Southern gels; as chromosome markers or tags (when labeled) to identify chromosomes or to map related gene positions; to compare with endogenous DNA sequences in patients to identify potential genetic disorders; as probes to hybridize and thus discover novel, related DNA sequences; as a source of information to derive PCR primers for genetic fingerprinting; as a probe to "subtract-out" known sequences in the process of discovering other novel polynucleotides; for selecting and making oligomers for attachment to a "gene chip" or other support, including for examination of expression patterns; to raise anti-protein antibodies using DNA immunization techniques; and as an antigen to raise anti-DNA antibodies or elicit another immune response. Where the polynucleotide encodes a protein which binds or potentially binds to another protein (such as, for example, in a receptor-ligand interaction), the polynucleotide can also be used in interaction trap assays (such as, for example, that described in Gyuris et al., Cell 75:791-803 (1993)) to

identify polynucleotides encoding the other protein with which binding occurs or to identify inhibitors of the binding interaction.

The proteins provided by the present invention can similarly be used in assay to determine biological activity, including in a panel of multiple proteins for high-throughput screening; to raise antibodies or to elicit another immune response; as a reagent (including the labeled reagent) in assays designed to quantitatively determine levels of the protein (or its receptor) in biological fluids; as markers for tissues in which the corresponding protein is preferentially expressed (either constitutively or at a particular stage of tissue differentiation or development or in a disease state); and, of course, to isolate correlative receptors or ligands. Where the protein binds or potentially binds to another protein (such as, for example, in a receptor-ligand interaction), the protein can be used to identify the other protein with which binding occurs or to identify inhibitors of the binding interaction. Proteins involved in these binding interactions can also be used to screen for peptide or small molecule inhibitors or agonists of the binding interaction.

Any or all of these research utilities are capable of being developed into reagent grade or kit format for commercialization as research products.

Methods for performing the uses listed above are well known to those skilled in the art. References disclosing such methods include without limitation "Molecular Cloning: A Laboratory Manual", 2d ed., Cold Spring Harbor Laboratory Press, Sambrook, J., E.F. Fritsch and T. Maniatis eds., 1989, and "Methods in Enzymology: Guide to Molecular Cloning Techniques", Academic Press, Berger, S.L. and A.R. Kimmel eds., 1987.

Nutritional Uses

Polynucleotides and proteins of the present invention can also be used as nutritional sources or supplements. Such uses include without limitation use as a protein or amino acid supplement, use as a carbon source, use as a nitrogen source and use as a source of carbohydrate. In such cases the protein or polynucleotide of the invention can be added to the feed of a particular organism or can be administered as a separate solid or liquid preparation, such as in the form of powder, pills, solutions, suspensions or capsules. In the case of microorganisms, the protein or polynucleotide of the invention can be added to the medium in or on which the microorganism is cultured.

Cytokine and Cell Proliferation/Differentiation Activity

A protein of the present invention may exhibit cytokine, cell proliferation (either inducing or inhibiting) or cell differentiation (either inducing or inhibiting) activity or may induce production of other cytokines in certain cell populations. Many protein factors discovered to date, including all known cytokines, have exhibited activity in one or more factor dependent cell proliferation assays, and hence the assays serve as a convenient confirmation of cytokine activity. The activity of a protein of the present invention is evidenced by any one of a number of routine factor dependent cell proliferation assays for cell lines including, without limitation, 32D, DA2, DA1G, T10, B9, B9/11, BaF3, MC9/G, M+ (preB M+), 2E8, RB5, DA1, 123, T1165, HT2, CTLL2, TF-1, Mo7e and CMK.

The activity of a protein of the invention may, among other means, be measured by the following methods:

Assays for T-cell or thymocyte proliferation include without limitation those described in: Current Protocols in Immunology, Ed by J. E. Coligan, A.M. Kruisbeek, D.H. Margulies, E.M. Shevach, W Strober, Pub. Greene Publishing Associates and Wiley-Interscience (Chapter 3, In Vitro assays for Mouse Lymphocyte Function 3.1-3.19; Chapter 7, Immunologic studies in Humans); Takai et al., J. Immunol. 137:3494-3500, 1986; Bertagnolli et al., J. Immunol. 145:1706-1712, 1990; Bertagnolli et al., Cellular Immunology 133:327-341, 1991; Bertagnolli, et al., J. Immunol. 149:3778-3783, 1992; Bowman et al., J. Immunol. 152: 1756-1761, 1994.

Assays for cytokine production and/or proliferation of spleen cells, lymph node cells or thymocytes include, without limitation, those described in: Polyclonal T cell stimulation, Kruisbeek, A.M. and Shevach, E.M. In *Current Protocols in Immunology*. J.E.e.a. Coligan eds. Vol 1 pp. 3.12.1-3.12.14, John Wiley and Sons, Toronto. 1994; and Measurement of mouse and human Interferon γ, Schreiber, R.D. In *Current Protocols in Immunology*. J.E.e.a. Coligan eds. Vol 1 pp. 6.8.1-6.8.8, John Wiley and Sons, Toronto. 1994.

Assays for proliferation and differentiation of hematopoietic and lymphopoietic cells include, without limitation, those described in: Measurement of Human and Murine Interleukin 2 and Interleukin 4, Bottomly, K., Davis, L.S. and Lipsky, P.E. In *Current Protocols in Immunology*. J.E.e.a. Coligan eds. Vol 1 pp. 6.3.1-6.3.12, John Wiley and Sons, Toronto. 1991; deVries et al., J. Exp. Med. 173:1205-1211, 1991; Moreau et al., Nature 336:690-692, 1988; Greenberger et al., Proc.

Natl. Acad. Sci. U.S.A. 80:2931-2938, 1983; Measurement of mouse and human interleukin 6 - Nordan, R. In *Current Protocols in Immunology*. J.E.e.a. Coligan eds. Vol 1 pp. 6.6.1-6.6.5, John Wiley and Sons, Toronto. 1991; Smith et al., Proc. Natl. Acad. Sci. U.S.A. 83:1857-1861, 1986; Measurement of human Interleukin 11 - Bennett, F., Giannotti, J., Clark, S.C. and Turner, K. J. In *Current Protocols in Immunology*. J.E.e.a. Coligan eds. Vol 1 pp. 6.15.1 John Wiley and Sons, Toronto. 1991; Measurement of mouse and human Interleukin 9 - Ciarletta, A., Giannotti, J., Clark, S.C. and Turner, K.J. In *Current Protocols in Immunology*. J.E.e.a. Coligan eds. Vol 1 pp. 6.13.1, John Wiley and Sons, Toronto. 1991.

Assays for T-cell clone responses to antigens (which will identify, among others, proteins that affect APC-T cell interactions as well as direct T-cell effects by measuring proliferation and cytokine production) include, without limitation, those described in: Current Protocols in Immunology, Ed by J. E. Coligan, A.M. Kruisbeek, D.H. Margulies, E.M. Shevach, W Strober, Pub. Greene Publishing Associates and Wiley-Interscience (Chapter 3, In Vitro assays for Mouse Lymphocyte Function; Chapter 6, Cytokines and their cellular receptors; Chapter 7, Immunologic studies in Humans); Weinberger et al., Proc. Natl. Acad. Sci. USA 77:6091-6095, 1980; Weinberger et al., Eur. J. Immun. 11:405-411, 1981; Takai et al., J. Immunol. 137:3494-3500, 1986; Takai et al., J. Immunol. 140:508-512, 1988.

<u>Immune Stimulating or Suppressing Activity</u>

A protein of the present invention may also exhibit immune stimulating or immune suppressing activity, including without limitation the activities for which assays are described herein. A protein may be useful in the treatment of various immune deficiencies and disorders (including severe combined immunodeficiency (SCID)), e.g., in regulating (up or down) growth and proliferation of T and/or B lymphocytes, as well as effecting the cytolytic activity of NK cells and other cell populations. These immune deficiencies may be genetic or be caused by viral (e.g., HIV) as well as bacterial or fungal infections, or may result from autoimmune disorders. More specifically, infectious diseases causes by viral, bacterial, fungal or other infection may be treatable using a protein of the present invention, including infections by HIV, hepatitis viruses, herpesviruses, mycobacteria, Leishmania spp., malaria spp. and various fungal infections such as candidiasis. Of course, in this

regard, a protein of the present invention may also be useful where a boost to the immune system generally may be desirable, *i.e.*, in the treatment of cancer.

Autoimmune disorders which may be treated using a protein of the present invention include, for example, connective tissue disease, multiple sclerosis, systemic lupus erythematosus, rheumatoid arthritis, autoimmune pulmonary inflammation, Guillain-Barre syndrome, autoimmune thyroiditis, insulin dependent diabetes mellitis, myasthenia gravis, graft-versus-host disease and autoimmune inflammatory eye disease. Such a protein of the present invention may also to be useful in the treatment of allergic reactions and conditions, such as asthma (particularly allergic asthma) or other respiratory problems. Other conditions, in which immune suppression is desired (including, for example, organ transplantation), may also be treatable using a protein of the present invention.

Using the proteins of the invention it may also be possible to immune responses, in a number of ways. Down regulation may be in the form of inhibiting or blocking an immune response already in progress or may involve preventing the induction of an immune response. The functions of activated T cells may be inhibited by suppressing T cell responses or by inducing specific tolerance in T cells, or both. Immunosuppression of T cell responses is generally an active, non-antigen-specific, process which requires continuous exposure of the T cells to the suppressive agent. Tolerance, which involves inducing non-responsiveness or anergy in T cells, is distinguishable from immunosuppression in that it is generally antigen-specific and persists after exposure to the tolerizing agent has ceased. Operationally, tolerance can be demonstrated by the lack of a T cell response upon reexposure to specific antigen in the absence of the tolerizing agent.

Down regulating or preventing one or more antigen functions (including without limitation B lymphocyte antigen functions (such as , for example, B7)), *e.g.*, preventing high level lymphokine synthesis by activated T cells, will be useful in situations of tissue, skin and organ transplantation and in graft-versus-host disease (GVHD). For example, blockage of T cell function should result in reduced tissue destruction in tissue transplantation. Typically, in tissue transplants, rejection of the transplant is initiated through its recognition as foreign by T cells, followed by an immune reaction that destroys the transplant. The administration of a molecule which inhibits or blocks interaction of a B7 lymphocyte antigen with its natural ligand(s) on immune cells (such as a soluble, monomeric form of a peptide having

B7-2 activity alone or in conjunction with a monomeric form of a peptide having an activity of another B lymphocyte antigen (*e.g.*, B7-1, B7-3) or blocking antibody), prior to transplantation can lead to the binding of the molecule to the natural ligand(s) on the immune cells without transmitting the corresponding costimulatory signal. Blocking B lymphocyte antigen function in this matter prevents cytokine synthesis by immune cells, such as T cells, and thus acts as an immunosuppressant. Moreover, the lack of costimulation may also be sufficient to anergize the T cells, thereby inducing tolerance in a subject. Induction of long-term tolerance by B lymphocyte antigen-blocking reagents may avoid the necessity of repeated administration of these blocking reagents. To achieve sufficient immunosuppression or tolerance in a subject, it may also be necessary to block the function of a combination of B lymphocyte antigens.

The efficacy of particular blocking reagents in preventing organ transplant rejection or GVHD can be assessed using animal models that are predictive of efficacy in humans. Examples of appropriate systems which can be used include allogeneic cardiac grafts in rats and xenogeneic pancreatic islet cell grafts in mice, both of which have been used to examine the immunosuppressive effects of CTLA4Ig fusion proteins *in vivo* as described in Lenschow *et al.*, Science *257*:789-792 (1992) and Turka *et al.*, Proc. Natl. Acad. Sci USA, *89*:11102-11105 (1992). In addition, murine models of GVHD (see Paul ed., Fundamental Immunology, Raven Press, New York, 1989, pp. 846-847) can be used to determine the effect of blocking B lymphocyte antigen function *in vivo* on the development of that disease.

Blocking antigen function may also be therapeutically useful for treating autoimmune diseases. Many autoimmune disorders are the result of inappropriate activation of T cells that are reactive against self tissue and which promote the production of cytokines and autoantibodies involved in the pathology of the diseases. Preventing the activation of autoreactive T cells may reduce or eliminate disease symptoms. Administration of reagents which block costimulation of T cells by disrupting receptor:ligand interactions of B lymphocyte antigens can be used to inhibit T cell activation and prevent production of autoantibodies or T cell-derived cytokines which may be involved in the disease process. Additionally, blocking reagents may induce antigen-specific tolerance of autoreactive T cells which could lead to long-term relief from the disease. The efficacy of blocking reagents in preventing or alleviating autoimmune disorders can be determined using a number

of well-characterized animal models of human autoimmune diseases. Examples include murine experimental autoimmune encephalitis, systemic lupus erythmatosis in MRL/*lpr/lpr* mice or NZB hybrid mice, murine autoimmune collagen arthritis, diabetes mellitus in NOD mice and BB rats, and murine experimental myasthenia gravis (see Paul ed., Fundamental Immunology, Raven Press, New York, 1989, pp. 840-856).

Upregulation of an antigen function (preferably a B lymphocyte antigen function), as a means of up regulating immune responses, may also be useful in therapy. Upregulation of immune responses may be in the form of enhancing an existing immune response or eliciting an initial immune response. For example, enhancing an immune response through stimulating B lymphocyte antigen function may be useful in cases of viral infection. In addition, systemic viral diseases such as influenza, the common cold, and encephalitis might be alleviated by the administration of stimulatory forms of B lymphocyte antigens systemically.

Alternatively, anti-viral immune responses may be enhanced in an infected patient by removing T cells from the patient, costimulating the T cells *in vitro* with viral antigen-pulsed APCs either expressing a peptide of the present invention or together with a stimulatory form of a soluble peptide of the present invention and reintroducing the *in vitro* activated T cells into the patient. Another method of enhancing anti-viral immune responses would be to isolate infected cells from a patient, transfect them with a nucleic acid encoding a protein of the present invention as described herein such that the cells express all or a portion of the protein on their surface, and reintroduce the transfected cells into the patient. The infected cells would now be capable of delivering a costimulatory signal to, and thereby activate, T cells *in vivo*.

In another application, up regulation or enhancement of antigen function (preferably B lymphocyte antigen function) may be useful in the induction of tumor immunity. Tumor cells (*e.g.*, sarcoma, melanoma, lymphoma, leukemia, neuroblastoma, carcinoma) transfected with a nucleic acid encoding at least one peptide of the present invention can be administered to a subject to overcome tumor-specific tolerance in the subject. If desired, the tumor cell can be transfected to express a combination of peptides. For example, tumor cells obtained from a patient can be transfected *ex vivo* with an expression vector directing the expression of a peptide having B7-2-like activity alone, or in conjunction with a peptide having B7-1-

like activity and/or B7-3-like activity. The transfected tumor cells are returned to the patient to result in expression of the peptides on the surface of the transfected cell. Alternatively, gene therapy techniques can be used to target a tumor cell for transfection *in vivo*.

The presence of the peptide of the present invention having the activity of a B lymphocyte antigen(s) on the surface of the tumor cell provides the necessary costimulation signal to T cells to induce a T cell mediated immune response against the transfected tumor cells. In addition, tumor cells which lack MHC class I or MHC class II molecules, or which fail to reexpress sufficient amounts of MHC class I or MHC class II molecules, can be transfected with nucleic acid encoding all or a portion of (*e.g.*, a cytoplasmic-domain truncated portion) of an MHC class I α chain protein and β_2 microglobulin protein or an MHC class II α chain protein and an MHC class II β chain protein to thereby express MHC class I or MHC class II proteins on the cell surface. Expression of the appropriate class I or class II MHC in conjunction with a peptide having the activity of a B lymphocyte antigen (*e.g.*, B7-1, B7-2, B7-3) induces a T cell mediated immune response against the transfected tumor cell. Optionally, a gene encoding an antisense construct which blocks expression of an MHC class II associated protein, such as the invariant chain, can also be cotransfected with a DNA encoding a peptide having the activity of a B lymphocyte antigen to promote presentation of tumor associated antigens and induce tumor specific immunity. Thus, the induction of a T cell mediated immune response in a human subject may be sufficient to overcome tumor-specific tolerance in the subject.

The activity of a protein of the invention may, among other means, be measured by the following methods:

Suitable assays for thymocyte or splenocyte cytotoxicity include, without limitation, those described in: Current Protocols in Immunology, Ed by J. E. Coligan, A.M. Kruisbeek, D.H. Margulies, E.M. Shevach, W Strober, Pub. Greene Publishing Associates and Wiley-Interscience (Chapter 3, In Vitro assays for Mouse Lymphocyte Function 3.1-3.19; Chapter 7, Immunologic studies in Humans); Herrmann et al., Proc. Natl. Acad. Sci. USA 78:2488-2492, 1981; Herrmann et al., J. Immunol. 128:1968-1974, 1982; Handa et al., J. Immunol. 135:1564-1572, 1985; Takai et al., J. Immunol. 137:3494-3500, 1986; Takai et al., J. Immunol. 140:508-512, 1988; Herrmann et al., Proc. Natl. Acad. Sci. USA 78:2488-2492, 1981; Herrmann et al., J. Immunol. 128:1968-1974, 1982; Handa et al., J. Immunol. 135:1564-1572, 1985; Takai et al., J.

Immunol. 137:3494-3500, 1986; Bowmanet al., J. Virology 61:1992-1998; Takai et al., J. Immunol. 140:508-512, 1988; Bertagnolli et al., Cellular Immunology 133:327-341, 1991; Brown et al., J. Immunol. 153:3079-3092, 1994.

Assays for T-cell-dependent immunoglobulin responses and isotype switching (which will identify, among others, proteins that modulate T-cell dependent antibody responses and that affect Th1/Th2 profiles) include, without limitation, those described in: Maliszewski, J. Immunol. 144:3028-3033, 1990; and Assays for B cell function: *In vitro* antibody production, Mond, J.J. and Brunswick, M. In *Current Protocols in Immunology*. J.E.e.a. Coligan eds. Vol 1 pp. 3.8.1-3.8.16, John Wiley and Sons, Toronto. 1994.

Mixed lymphocyte reaction (MLR) assays (which will identify, among others, proteins that generate predominantly Th1 and CTL responses) include, without limitation, those described in: Current Protocols in Immunology, Ed by J. E. Coligan, A.M. Kruisbeek, D.H. Margulies, E.M. Shevach, W Strober, Pub. Greene Publishing Associates and Wiley-Interscience (Chapter 3, In Vitro assays for Mouse Lymphocyte Function 3.1-3.19; Chapter 7, Immunologic studies in Humans); Takai et al., J. Immunol. 137:3494-3500, 1986; Takai et al., J. Immunol. 140:508-512, 1988; Bertagnolli et al., J. Immunol. 149:3778-3783, 1992.

Dendritic cell-dependent assays (which will identify, among others, proteins expressed by dendritic cells that activate naive T-cells) include, without limitation, those described in: Guery et al., J. Immunol. 134:536-544, 1995; Inaba et al., Journal of Experimental Medicine 173:549-559, 1991; Macatonia et al., Journal of Immunology 154:5071-5079, 1995; Porgador et al., Journal of Experimental Medicine 182:255-260, 1995; Nair et al., Journal of Virology 67:4062-4069, 1993; Huang et al., Science 264:961-965, 1994; Macatonia et al., Journal of Experimental Medicine 169:1255-1264, 1989; Bhardwaj et al., Journal of Clinical Investigation 94:797-807, 1994; and Inaba et al., Journal of Experimental Medicine 172:631-640, 1990.

Assays for lymphocyte survival/apoptosis (which will identify, among others, proteins that prevent apoptosis after superantigen induction and proteins that regulate lymphocyte homeostasis) include, without limitation, those described in: Darzynkiewicz et al., Cytometry 13:795-808, 1992; Gorczyca et al., Leukemia 7:659-670, 1993; Gorczyca et al., Cancer Research 53:1945-1951, 1993; Itoh et al., Cell 66:233-243, 1991; Zacharchuk, Journal of Immunology 145:4037-4045, 1990; Zamai et

al., Cytometry 14:891-897, 1993; Gorczyca et al., International Journal of Oncology 1:639-648, 1992.

Assays for proteins that influence early steps of T-cell commitment and development include, without limitation, those described in: Antica et al., Blood 84:111-117, 1994; Fine et al., Cellular Immunology 155:111-122, 1994; Galy et al., Blood 85:2770-2778, 1995; Toki et al., Proc. Nat. Acad Sci. USA 88:7548-7551, 1991.

Hematopoiesis Regulating Activity

A protein of the present invention may be useful in regulation of hematopoiesis and, consequently, in the treatment of myeloid or lymphoid cell deficiencies. Even marginal biological activity in support of colony forming cells or of factor-dependent cell lines indicates involvement in regulating hematopoiesis, e.g. in supporting the growth and proliferation of erythroid progenitor cells alone or in combination with other cytokines, thereby indicating utility, for example, in treating various anemias or for use in conjunction with irradiation/chemotherapy to stimulate the production of erythroid precursors and/or erythroid cells; in supporting the growth and proliferation of myeloid cells such as granulocytes and monocytes/macrophages (i.e., traditional CSF activity) useful, for example, in conjunction with chemotherapy to prevent or treat consequent myelo-suppression; in supporting the growth and proliferation of megakaryocytes and consequently of platelets thereby allowing prevention or treatment of various platelet disorders such as thrombocytopenia, and generally for use in place of or complimentary to platelet transfusions; and/or in supporting the growth and proliferation of hematopoietic stem cells which are capable of maturing to any and all of the above-mentioned hematopoietic cells and therefore find therapeutic utility in various stem cell disorders (such as those usually treated with transplantation, including, without limitation, aplastic anemia and paroxysmal nocturnal hemoglobinuria), as well as in repopulating the stem cell compartment post irradiation/chemotherapy, either *in-vivo* or *ex-vivo* (i.e., in conjunction with bone marrow transplantation or with peripheral progenitor cell transplantation (homologous or heterologous)) as normal cells or genetically manipulated for gene therapy.

The activity of a protein of the invention may, among other means, be measured by the following methods:

Suitable assays for proliferation and differentiation of various hematopoietic lines are cited above.

Assays for embryonic stem cell differentiation (which will identify, among others, proteins that influence embryonic differentiation hematopoiesis) include, without limitation, those described in: Johansson et al. Cellular Biology 15:141-151, 1995; Keller et al., Molecular and Cellular Biology 13:473-486, 1993; McClanahan et al., Blood 81:2903-2915, 1993.

Assays for stem cell survival and differentiation (which will identify, among others, proteins that regulate lympho-hematopoiesis) include, without limitation, those described in: Methylcellulose colony forming assays, Freshney, M.G. In *Culture of Hematopoietic Cells*. R.I. Freshney, *et al.* eds. Vol pp. 265-268, Wiley-Liss, Inc., New York, NY. 1994; Hirayama et al., Proc. Natl. Acad. Sci. USA 89:5907-5911, 1992; Primitive hematopoietic colony forming cells with high proliferative potential, McNiece, I.K. and Briddell, R.A. In *Culture of Hematopoietic Cells*. R.I. Freshney, *et al.* eds. Vol pp. 23-39, Wiley-Liss, Inc., New York, NY. 1994; Neben et al., Experimental Hematology 22:353-359, 1994; Cobblestone area forming cell assay, Ploemacher, R.E. In *Culture of Hematopoietic Cells*. R.I. Freshney, *et al.* eds. Vol pp. 1-21, Wiley-Liss, Inc.., New York, NY. 1994; Long term bone marrow cultures in the presence of stromal cells, Spooncer, E., Dexter, M. and Allen, T. In *Culture of Hematopoietic Cells*. R.I. Freshney, *et al.* eds. Vol pp. 163-179, Wiley-Liss, Inc., New York, NY. 1994; Long term culture initiating cell assay, Sutherland, H.J. In *Culture of Hematopoietic Cells*. R.I. Freshney, *et al.* eds. Vol pp. 139-162, Wiley-Liss, Inc., New York, NY. 1994.

Tissue Growth Activity

A protein of the present invention also may have utility in compositions used for bone, cartilage, tendon, ligament and/or nerve tissue growth or regeneration, as well as for wound healing and tissue repair and replacement, and in the treatment of burns, incisions and ulcers.

A protein of the present invention, which induces cartilage and/or bone growth in circumstances where bone is not normally formed, has application in the healing of bone fractures and cartilage damage or defects in humans and other animals. Such a preparation employing a protein of the invention may have prophylactic use in closed as well as open fracture reduction and also in the improved fixation of artificial joints. *De novo* bone formation induced by an

osteogenic agent contributes to the repair of congenital, trauma induced, or oncologic resection induced craniofacial defects, and also is useful in cosmetic plastic surgery.

A protein of this invention may also be used in the treatment of periodontal disease, and in other tooth repair processes. Such agents may provide an environment to attract bone-forming cells, stimulate growth of bone-forming cells or induce differentiation of progenitors of bone-forming cells. A protein of the invention may also be useful in the treatment of osteoporosis or osteoarthritis, such as through stimulation of bone and/or cartilage repair or by blocking inflammation or processes of tissue destruction (collagenase activity, osteoclast activity, etc.) mediated by inflammatory processes.

Another category of tissue regeneration activity that may be attributable to the protein of the present invention is tendon/ligament formation. A protein of the present invention, which induces tendon/ligament-like tissue or other tissue formation in circumstances where such tissue is not normally formed, has application in the healing of tendon or ligament tears, deformities and other tendon or ligament defects in humans and other animals. Such a preparation employing a tendon/ligament-like tissue inducing protein may have prophylactic use in preventing damage to tendon or ligament tissue, as well as use in the improved fixation of tendon or ligament to bone or other tissues, and in repairing defects to tendon or ligament tissue. De novo tendon/ligament-like tissue formation induced by a composition of the present invention contributes to the repair of congenital, trauma induced, or other tendon or ligament defects of other origin, and is also useful in cosmetic plastic surgery for attachment or repair of tendons or ligaments. The compositions of the present invention may provide an environment to attract tendon- or ligament-forming cells, stimulate growth of tendon- or ligament-forming cells, induce differentiation of progenitors of tendon- or ligament-forming cells, or induce growth of tendon/ligament cells or progenitors *ex vivo* for return *in vivo* to effect tissue repair. The compositions of the invention may also be useful in the treatment of tendinitis, carpal tunnel syndrome and other tendon or ligament defects. The compositions may also include an appropriate matrix and/or sequestering agent as a carrier as is well known in the art.

The protein of the present invention may also be useful for proliferation of neural cells and for regeneration of nerve and brain tissue, *i.e.* for the treatment of central and peripheral nervous system diseases and neuropathies, as well as

mechanical and traumatic disorders, which involve degeneration, death or trauma to neural cells or nerve tissue. More specifically, a protein may be used in the treatment of diseases of the peripheral nervous system, such as peripheral nerve injuries, peripheral neuropathy and localized neuropathies, and central nervous system diseases, such as Alzheimer's, Parkinson's disease, Huntington's disease, amyotrophic lateral sclerosis, and Shy-Drager syndrome. Further conditions which may be treated in accordance with the present invention include mechanical and traumatic disorders, such as spinal cord disorders, head trauma and cerebrovascular diseases such as stroke. Peripheral neuropathies resulting from chemotherapy or other medical therapies may also be treatable using a protein of the invention.

Proteins of the invention may also be useful to promote better or faster closure of non-healing wounds, including without limitation pressure ulcers, ulcers associated with vascular insufficiency, surgical and traumatic wounds, and the like.

It is expected that a protein of the present invention may also exhibit activity for generation or regeneration of other tissues, such as organs (including, for example, pancreas, liver, intestine, kidney, skin, endothelium), muscle (smooth, skeletal or cardiac) and vascular (including vascular endothelium) tissue, or for promoting the growth of cells comprising such tissues. Part of the desired effects may be by inhibition or modulation of fibrotic scarring to allow normal tissue to regenerate. A protein of the invention may also exhibit angiogenic activity.

A protein of the present invention may also be useful for gut protection or regeneration and treatment of lung or liver fibrosis, reperfusion injury in various tissues, and conditions resulting from systemic cytokine damage.

A protein of the present invention may also be useful for promoting or inhibiting differentiation of tissues described above from precursor tissues or cells; or for inhibiting the growth of tissues described above.

The activity of a protein of the invention may, among other means, be measured by the following methods:

Assays for tissue generation activity include, without limitation, those described in: International Patent Publication No. WO95/16035 (bone, cartilage, tendon); International Patent Publication No. WO95/05846 (nerve, neuronal); International Patent Publication No. WO91/07491 (skin, endothelium).

Assays for wound healing activity include, without limitation, those described in: Winter, Epidermal Wound Healing, pps. 71-112 (Maibach, HI and Rovee, DT,

eds.), Year Book Medical Publishers, Inc., Chicago, as modified by Eaglstein and Mertz, J. Invest. Dermatol 71:382-84 (1978).

Activin/Inhibin Activity

A protein of the present invention may also exhibit activin- or inhibin-related activities. Inhibins are characterized by their ability to inhibit the release of follicle stimulating hormone (FSH), while activins and are characterized by their ability to stimulate the release of follicle stimulating hormone (FSH). Thus, a protein of the present invention, alone or in heterodimers with a member of the inhibin α family, may be useful as a contraceptive based on the ability of inhibins to decrease fertility in female mammals and decrease spermatogenesis in male mammals. Administration of sufficient amounts of other inhibins can induce infertility in these mammals. Alternatively, the protein of the invention, as a homodimer or as a heterodimer with other protein subunits of the inhibin-β group, may be useful as a fertility inducing therapeutic, based upon the ability of activin molecules in stimulating FSH release from cells of the anterior pituitary. See, for example, United States Patent 4,798,885. A protein of the invention may also be useful for advancement of the onset of fertility in sexually immature mammals, so as to increase the lifetime reproductive performance of domestic animals such as cows, sheep and pigs.

The activity of a protein of the invention may, among other means, be measured by the following methods:

Assays for activin/inhibin activity include, without limitation, those described in: Vale et al., Endocrinology 91:562-572, 1972; Ling et al., Nature 321:779-782, 1986; Vale et al., Nature 321:776-779, 1986; Mason et al., Nature 318:659-663, 1985; Forage et al., Proc. Natl. Acad. Sci. USA 83:3091-3095, 1986.

Chemotactic/Chemokinetic Activity

A protein of the present invention may have chemotactic or chemokinetic activity (e.g., act as a chemokine) for mammalian cells, including, for example, monocytes, fibroblasts, neutrophils, T-cells, mast cells, eosinophils, epithelial and/or endothelial cells. Chemotactic and chemokinetic proteins can be used to mobilize or attract a desired cell population to a desired site of action. Chemotactic or chemokinetic proteins provide particular advantages in treatment of wounds and

other trauma to tissues, as well as in treatment of localized infections. For example, attraction of lymphocytes, monocytes or neutrophils to tumors or sites of infection may result in improved immune responses against the tumor or infecting agent.

A protein or peptide has chemotactic activity for a particular cell population if it can stimulate, directly or indirectly, the directed orientation or movement of such cell population. Preferably, the protein or peptide has the ability to directly stimulate directed movement of cells. Whether a particular protein has chemotactic activity for a population of cells can be readily determined by employing such protein or peptide in any known assay for cell chemotaxis.

The activity of a protein of the invention may, among other means, be measured by the following methods:

Assays for chemotactic activity (which will identify proteins that induce or prevent chemotaxis) consist of assays that measure the ability of a protein to induce the migration of cells across a membrane as well as the ability of a protein to induce the adhesion of one cell population to another cell population. Suitable assays for movement and adhesion include, without limitation, those described in: Current Protocols in Immunology, Ed by J.E. Coligan, A.M. Kruisbeek, D.H. Margulies, E.M. Shevach, W.Strober, Pub. Greene Publishing Associates and Wiley-Interscience (Chapter 6.12, Measurement of alpha and beta Chemokines 6.12.1-6.12.28; Taub et al. J. Clin. Invest. 95:1370-1376, 1995; Lind et al. APMIS 103:140-146, 1995; Muller et al Eur. J. Immunol. 25: 1744-1748; Gruber et al. J. of Immunol. 152:5860-5867, 1994; Johnston et al. J. of Immunol. 153: 1762-1768, 1994.

Hemostatic and Thrombolytic Activity

A protein of the invention may also exhibit hemostatic or thrombolytic activity. As a result, such a protein is expected to be useful in treatment of various coagulation disorders (including hereditary disorders, such as hemophilias) or to enhance coagulation and other hemostatic events in treating wounds resulting from trauma, surgery or other causes. A protein of the invention may also be useful for dissolving or inhibiting formation of thromboses and for treatment and prevention of conditions resulting therefrom (such as, for example, infarction of cardiac and central nervous system vessels (e.g., stroke).

The activity of a protein of the invention may, among other means, be measured by the following methods:

Assay for hemostatic and thrombolytic activity include, without limitation, those described in: Linet et al., J. Clin. Pharmacol. 26:131-140, 1986; Burdick et al., Thrombosis Res. 45:413-419, 1987; Humphrey et al., Fibrinolysis 5:71-79 (1991); Schaub, Prostaglandins 35:467-474, 1988.

Receptor/Ligand Activity

A protein of the present invention may also demonstrate activity as receptors, receptor ligands or inhibitors or agonists of receptor/ligand interactions. Examples of such receptors and ligands include, without limitation, cytokine receptors and their ligands, receptor kinases and their ligands, receptor phosphatases and their ligands, receptors involved in cell-cell interactions and their ligands (including without limitation, cellular adhesion molecules (such as selectins, integrins and their ligands) and receptor/ligand pairs involved in antigen presentation, antigen recognition and development of cellular and humoral immune responses). Receptors and ligands are also useful for screening of potential peptide or small molecule inhibitors of the relevant receptor/ligand interaction. A protein of the present invention (including, without limitation, fragments of receptors and ligands) may themselves be useful as inhibitors of receptor/ligand interactions.

The activity of a protein of the invention may, among other means, be measured by the following methods:

Suitable assays for receptor-ligand activity include without limitation those described in:Current Protocols in Immunology, Ed by J.E. Coligan, A.M. Kruisbeek, D.H. Margulies, E.M. Shevach, W.Strober, Pub. Greene Publishing Associates and Wiley-Interscience (Chapter 7.28, Measurement of Cellular Adhesion under static conditions 7.28.1-7.28.22), Takai et al., Proc. Natl. Acad. Sci. USA 84:6864-6868, 1987; Bierer et al., J. Exp. Med. 168:1145-1156, 1988; Rosenstein et al., J. Exp. Med. 169:149-160 1989; Stoltenborg et al., J. Immunol. Methods 175:59-68, 1994; Stitt et al., Cell 80:661-670, 1995.

Anti-Inflammatory Activity

Proteins of the present invention may also exhibit anti-inflammatory activity. The anti-inflammatory activity may be achieved by providing a stimulus to cells involved in the inflammatory response, by inhibiting or promoting cell-cell interactions (such as, for example, cell adhesion), by inhibiting or promoting

chemotaxis of cells involved in the inflammatory process, inhibiting or promoting cell extravasation, or by stimulating or suppressing production of other factors which more directly inhibit or promote an inflammatory response. Proteins exhibiting such activities can be used to treat inflammatory conditions including chronic or acute conditions), including without limitation inflammation associated with infection (such as septic shock, sepsis or systemic inflammatory response syndrome (SIRS)), ischemia-reperfusion injury, endotoxin lethality, arthritis, complement-mediated hyperacute rejection, nephritis, cytokine or chemokine-induced lung injury, inflammatory bowel disease, Crohn's disease or resulting from over production of cytokines such as TNF or IL-1. Proteins of the invention may also be useful to treat anaphylaxis and hypersensitivity to an antigenic substance or material.

Tumor Inhibition Activity

In addition to the activities described above for immunological treatment or prevention of tumors, a protein of the invention may exhibit other anti-tumor activities. A protein may inhibit tumor growth directly or indirectly (such as, for example, via ADCC). A protein may exhibit its tumor inhibitory activity by acting on tumor tissue or tumor precursor tissue, by inhibiting formation of tissues necessary to support tumor growth (such as, for example, by inhibiting angiogenesis), by causing production of other factors, agents or cell types which inhibit tumor growth, or by suppressing, eliminating or inhibiting factors, agents or cell types which promote tumor growth.

Other Activities

A protein of the invention may also exhibit one or more of the following additional activities or effects: inhibiting the growth, infection or function of, or killing, infectious agents, including, without limitation, bacteria, viruses, fungi and other parasites; effecting (suppressing or enhancing) bodily characteristics, including, without limitation, height, weight, hair color, eye color, skin, fat to lean ratio or other tissue pigmentation, or organ or body part size or shape (such as, for example, breast augmentation or diminution, change in bone form or shape); effecting biorhythms or caricadic cycles or rhythms; effecting the fertility of male or female subjects; effecting the metabolism, catabolism, anabolism, processing, utilization, storage or elimination

of dietary fat, lipid, protein, carbohydrate, vitamins, minerals, cofactors or other nutritional factors or component(s); effecting behavioral characteristics, including, without limitation, appetite, libido, stress, cognition (including cognitive disorders), depression (including depressive disorders) and violent behaviors; providing analgesic effects or other pain reducing effects; promoting differentiation and growth of embryonic stem cells in lineages other than hematopoietic lineages; hormonal or endocrine activity; in the case of enzymes, correcting deficiencies of the enzyme and treating deficiency-related diseases; treatment of hyperproliferative disorders (such as, for example, psoriasis); immunoglobulin-like activity (such as, for example, the ability to bind antigens or complement); and the ability to act as an antigen in a vaccine composition to raise an immune response against such protein or another material or entity which is cross-reactive with such protein.

ADMINISTRATION AND DOSING

A protein of the present invention (from whatever source derived, including without limitation from recombinant and non-recombinant sources) may be used in a pharmaceutical composition when combined with a pharmaceutically acceptable carrier. Such a composition may also contain (in addition to protein and a carrier) diluents, fillers, salts, buffers, stabilizers, solubilizers, and other materials well known in the art. The term "pharmaceutically acceptable" means a non-toxic material that does not interfere with the effectiveness of the biological activity of the active ingredient(s). The characteristics of the carrier will depend on the route of administration. The pharmaceutical composition of the invention may also contain cytokines, lymphokines, or other hematopoietic factors such as M-CSF, GM-CSF, TNF, IL-1, IL-2, IL-3, IL-4, IL-5, IL-6, IL-7, IL-8, IL-9, IL-10, IL-11, IL-12, IL-13, IL-14, IL-15, IFN, TNF0, TNF1, TNF2, G-CSF, Meg-CSF, thrombopoietin, stem cell factor, and erythropoietin. The pharmaceutical composition may further contain other agents which either enhance the activity of the protein or compliment its activity or use in treatment. Such additional factors and/or agents may be included in the pharmaceutical composition to produce a synergistic effect with protein of the invention, or to minimize side effects. Conversely, protein of the present invention may be included in formulations of the particular cytokine, lymphokine, other hematopoietic factor, thrombolytic or anti-thrombotic factor, or anti-inflammatory agent to minimize side effects of the cytokine, lymphokine, other hematopoietic factor, thrombolytic or anti-thrombotic factor, or anti-inflammatory agent.

A protein of the present invention may be active in multimers (e.g., heterodimers or homodimers) or complexes with itself or other proteins. As a result, pharmaceutical compositions of the invention may comprise a protein of the invention in such multimeric or complexed form.

The pharmaceutical composition of the invention may be in the form of a complex of the protein(s) of present invention along with protein or peptide antigens. The protein and/or peptide antigen will deliver a stimulatory signal to both B and T lymphocytes. B lymphocytes will respond to antigen through their surface immunoglobulin receptor. T lymphocytes will respond to antigen through the T cell receptor (TCR) following presentation of the antigen by MHC proteins. MHC and structurally related proteins including those encoded by class I and class II MHC genes on host cells will serve to present the peptide antigen(s) to T lymphocytes. The

antigen components could also be supplied as purified MHC-peptide complexes alone or with co-stimulatory molecules that can directly signal T cells. Alternatively antibodies able to bind surface immunolgobulin and other molecules on B cells as well as antibodies able to bind the TCR and other molecules on T cells can be combined with the pharmaceutical composition of the invention.

The pharmaceutical composition of the invention may be in the form of a liposome in which protein of the present invention is combined, in addition to other pharmaceutically acceptable carriers, with amphipathic agents such as lipids which exist in aggregated form as micelles, insoluble monolayers, liquid crystals, or lamellar layers in aqueous solution. Suitable lipids for liposomal formulation include, without limitation, monoglycerides, diglycerides, sulfatides, lysolecithin, phospholipids, saponin, bile acids, and the like. Preparation of such liposomal formulations is within the level of skill in the art, as disclosed, for example, in U.S. Patent No. 4,235,871; U.S. Patent No. 4,501,728; U.S. Patent No. 4,837,028; and U.S. Patent No. 4,737,323, all of which are incorporated herein by reference.

As used herein, the term "therapeutically effective amount" means the total amount of each active component of the pharmaceutical composition or method that is sufficient to show a meaningful patient benefit, i.e., treatment, healing, prevention or amelioration of the relevant medical condition, or an increase in rate of treatment, healing, prevention or amelioration of such conditions. When applied to an individual active ingredient, administered alone, the term refers to that ingredient alone. When applied to a combination, the term refers to combined amounts of the active ingredients that result in the therapeutic effect, whether administered in combination, serially or simultaneously.

In practicing the method of treatment or use of the present invention, a therapeutically effective amount of protein of the present invention is administered to a mammal having a condition to be treated. Protein of the present invention may be administered in accordance with the method of the invention either alone or in combination with other therapies such as treatments employing cytokines, lymphokines or other hematopoietic factors. When co-administered with one or more cytokines, lymphokines or other hematopoietic factors, protein of the present invention may be administered either simultaneously with the cytokine(s), lymphokine(s), other hematopoietic factor(s), thrombolytic or anti-thrombotic factors, or sequentially. If administered sequentially, the attending physician will decide on

the appropriate sequence of administering protein of the present invention in combination with cytokine(s), lymphokine(s), other hematopoietic factor(s), thrombolytic or anti-thrombotic factors.

Administration of protein of the present invention used in the pharmaceutical composition or to practice the method of the present invention can be carried out in a variety of conventional ways, such as oral ingestion, inhalation, topical application or cutaneous, subcutaneous, intraperitoneal, parenteral or intravenous injection. Intravenous administration to the patient is preferred.

When a therapeutically effective amount of protein of the present invention is administered orally, protein of the present invention will be in the form of a tablet, capsule, powder, solution or elixir. When administered in tablet form, the pharmaceutical composition of the invention may additionally contain a solid carrier such as a gelatin or an adjuvant. The tablet, capsule, and powder contain from about 5 to 95% protein of the present invention, and preferably from about 25 to 90% protein of the present invention. When administered in liquid form, a liquid carrier such as water, petroleum, oils of animal or plant origin such as peanut oil, mineral oil, soybean oil, or sesame oil, or synthetic oils may be added. The liquid form of the pharmaceutical composition may further contain physiological saline solution, dextrose or other saccharide solution, or glycols such as ethylene glycol, propylene glycol or polyethylene glycol. When administered in liquid form, the pharmaceutical composition contains from about 0.5 to 90% by weight of protein of the present invention, and preferably from about 1 to 50% protein of the present invention.

When a therapeutically effective amount of protein of the present invention is administered by intravenous, cutaneous or subcutaneous injection, protein of the present invention will be in the form of a pyrogen-free, parenterally acceptable aqueous solution. The preparation of such parenterally acceptable protein solutions, having due regard to pH, isotonicity, stability, and the like, is within the skill in the art. A preferred pharmaceutical composition for intravenous, cutaneous, or subcutaneous injection should contain, in addition to protein of the present invention, an isotonic vehicle such as Sodium Chloride Injection, Ringer's Injection, Dextrose Injection, Dextrose and Sodium Chloride Injection, Lactated Ringer's Injection, or other vehicle as known in the art. The pharmaceutical composition of the present invention may also contain stabilizers, preservatives, buffers, antioxidants, or other additives known to those of skill in the art.

The amount of protein of the present invention in the pharmaceutical composition of the present invention will depend upon the nature and severity of the condition being treated, and on the nature of prior treatments which the patient has undergone. Ultimately, the attending physician will decide the amount of protein of the present invention with which to treat each individual patient. Initially, the attending physician will administer low doses of protein of the present invention and observe the patient's response. Larger doses of protein of the present invention may be administered until the optimal therapeutic effect is obtained for the patient, and at that point the dosage is not increased further. It is contemplated that the various pharmaceutical compositions used to practice the method of the present invention should contain about 0.01 μg to about 100 mg (preferably about 0.1ng to about 10 mg, more preferably about 0.1 μg to about 1 mg) of protein of the present invention per kg body weight.

The duration of intravenous therapy using the pharmaceutical composition of the present invention will vary, depending on the severity of the disease being treated and the condition and potential idiosyncratic response of each individual patient. It is contemplated that the duration of each application of the protein of the present invention will be in the range of 12 to 24 hours of continuous intravenous administration. Ultimately the attending physician will decide on the appropriate duration of intravenous therapy using the pharmaceutical composition of the present invention.

Protein of the invention may also be used to immunize animals to obtain polyclonal and monoclonal antibodies which specifically react with the protein. Such antibodies may be obtained using either the entire protein or fragments thereof as an immunogen. The peptide immunogens additionally may contain a cysteine residue at the carboxyl terminus, and are conjugated to a hapten such as keyhole limpet hemocyanin (KLH). Methods for synthesizing such peptides are known in the art, for example, as in R.P. Merrifield, J. Amer.Chem.Soc. 85, 2149-2154 (1963); J.L. Krstenansky, *et al.*, FEBS Lett. 211, 10 (1987). Monoclonal antibodies binding to the protein of the invention may be useful diagnostic agents for the immunodetection of the protein. Neutralizing monoclonal antibodies binding to the protein may also be useful therapeutics for both conditions associated with the protein and also in the treatment of some forms of cancer where abnormal expression of the protein is involved. In the case of cancerous cells or leukemic cells, neutralizing monoclonal

antibodies against the protein may be useful in detecting and preventing the metastatic spread of the cancerous cells, which may be mediated by the protein.

For compositions of the present invention which are useful for bone, cartilage, tendon or ligament regeneration, the therapeutic method includes administering the composition topically, systematically, or locally as an implant or device. When administered, the therapeutic composition for use in this invention is, of course, in a pyrogen-free, physiologically acceptable form. Further, the composition may desirably be encapsulated or injected in a viscous form for delivery to the site of bone, cartilage or tissue damage. Topical administration may be suitable for wound healing and tissue repair. Therapeutically useful agents other than a protein of the invention which may also optionally be included in the composition as described above, may alternatively or additionally, be administered simultaneously or sequentially with the composition in the methods of the invention. Preferably for bone and/or cartilage formation, the composition would include a matrix capable of delivering the protein-containing composition to the site of bone and/or cartilage damage, providing a structure for the developing bone and cartilage and optimally capable of being resorbed into the body. Such matrices may be formed of materials presently in use for other implanted medical applications.

The choice of matrix material is based on biocompatibility, biodegradability, mechanical properties, cosmetic appearance and interface properties. The particular application of the compositions will define the appropriate formulation. Potential matrices for the compositions may be biodegradable and chemically defined calcium sulfate, tricalciumphosphate, hydroxyapatite, polylactic acid, polyglycolic acid and polyanhydrides. Other potential materials are biodegradable and biologically well-defined, such as bone or dermal collagen. Further matrices are comprised of pure proteins or extracellular matrix components. Other potential matrices are nonbiodegradable and chemically defined, such as sintered hydroxapatite, bioglass, aluminates, or other ceramics. Matrices may be comprised of combinations of any of the above mentioned types of material, such as polylactic acid and hydroxyapatite or collagen and tricalciumphosphate. The bioceramics may be altered in composition, such as in calcium-aluminate-phosphate and processing to alter pore size, particle size, particle shape, and biodegradability.

Presently preferred is a 50:50 (mole weight) copolymer of lactic acid and glycolic acid in the form of porous particles having diameters ranging from 150 to 800

microns. In some applications, it will be useful to utilize a sequestering agent, such as carboxymethyl cellulose or autologous blood clot, to prevent the protein compositions from disassociating from the matrix.

A preferred family of sequestering agents is cellulosic materials such as alkylcelluloses (including hydroxyalkylcelluloses), including methylcellulose, ethylcellulose, hydroxyethylcellulose, hydroxypropylcellulose, hydroxypropyl-methylcellulose, and carboxymethylcellulose, the most preferred being cationic salts of carboxymethylcellulose (CMC). Other preferred sequestering agents include hyaluronic acid, sodium alginate, poly(ethylene glycol), polyoxyethylene oxide, carboxyvinyl polymer and poly(vinyl alcohol). The amount of sequestering agent useful herein is 0.5-20 wt%, preferably 1-10 wt% based on total formulation weight, which represents the amount necessary to prevent desorbtion of the protein from the polymer matrix and to provide appropriate handling of the composition, yet not so much that the progenitor cells are prevented from infiltrating the matrix, thereby providing the protein the opportunity to assist the osteogenic activity of the progenitor cells.

In further compositions, proteins of the invention may be combined with other agents beneficial to the treatment of the bone and/or cartilage defect, wound, or tissue in question. These agents include various growth factors such as epidermal growth factor (EGF), platelet derived growth factor (PDGF), transforming growth factors (TGF-α and TGF-β), and insulin-like growth factor (IGF).

The therapeutic compositions are also presently valuable for veterinary applications. Particularly domestic animals and thoroughbred horses, in addition to humans, are desired patients for such treatment with proteins of the present invention.

The dosage regimen of a protein-containing pharmaceutical composition to be used in tissue regeneration will be determined by the attending physician considering various factors which modify the action of the proteins, e.g., amount of tissue weight desired to be formed, the site of damage, the condition of the damaged tissue, the size of a wound, type of damaged tissue (e.g., bone), the patient's age, sex, and diet, the severity of any infection, time of administration and other clinical factors. The dosage may vary with the type of matrix used in the reconstitution and with inclusion of other proteins in the pharmaceutical composition. For example, the addition of other known growth factors, such as IGF I (insulin like growth factor I),

to the final composition, may also effect the dosage. Progress can be monitored by periodic assessment of tissue/bone growth and/or repair, for example, X-rays, histomorphometric determinations and tetracycline labeling.

Polynucleotides of the present invention can also be used for gene therapy. Such polynucleotides can be introduced either *in vivo* or *ex vivo* into cells for expression in a mammalian subject. Polynucleotides of the invention may also be administered by other known methods for introduction of nucleic acid into a cell or organism (including, without limitation, in the form of viral vectors or naked DNA).

Cells may also be cultured *ex vivo* in the presence of proteins of the present invention in order to proliferate or to produce a desired effect on or activity in such cells. Treated cells can then be introduced *in vivo* for therapeutic purposes.

Patent and literature references cited herein are incorporated by reference as if fully set forth.

TABLE 3

Sel.	Species	Stage	Tissue	Cell Type	Treatment
PP	Human	Adult	Blood	LymphoblasticLeukemiaMOLT-4	None
PQ	Human	Adult	Tumor	ColorectalAdenocarcinomaSW480	None
PR	Human	Fetal	Kidney	N/A	None
PS	Human	Fetal	Kidney	N/A	None
PT	Human	Adult	Blood	LymphoblasticLeukemiaMOLT-4	None
PU	Human	Adult	Blood	Promyelocytic Leukemia HL-60	None
PV	Human	Adult	Brain	Cerebellum	None
PW	Human	Adult	Brain	Cerebellum	None
PX	Human	Adult	Brain	Cerebellum	None
PY	Human	Adult	Brain	Cerebellum	None
PZ	Human	Adult	Bone Marrow	N/A	None
Q	Mouse	Adult	Bone Marrow	N/A	5 fluoro-uracil
QA	Human	Adult	Cartilage	Chondrosarcoma HTB-94 line	None
QB	Human	Adult	Bladder	Carcinoma 5637	None
QC	Human	Adult	Neural	Neuroepithelioma HTB-10 line	None
QD	Human	Fetal	Embryo	FHs173 We HTB-158	None
QE	Human	Fetal	Liver	N/A	None
QF	Human	Adult	Bladder	Carcinoma 5637	None
QG	Human	Adult	Neural	Neuroepithelioma HTB-10 line	None
QH	Human	Fetal	Embryo	FHs173 We HTB-158	None
QL	Human	Fetal	Heart	18 weeks gestation	None
QM	Human	Adult	Blood	Histiocytic lymphoma U937	None
QN	Human	Adult	Cartilage	Chondrosarcoma HTB-94 line	None
QO	Human	Adult	Brain	Corpus Callosum	None
QR	Human	Adult	Brain	Subthalamic Nucleus	None
QS	Human	Fetal	Whole Embryo	N/A	None
QT	Human	Fetal	Kidney	N/A	None
QU	Human	Adult	Blood	ChronicMyelogenousLeukemiaK562	None
QV	Human	Adult	Testis	Embryonal Carcinoma NT2D1	RA for 23 days
QX	Human	Adult	Bone	Ewing's Sarcoma RD-ES	None
QY	Human	Adult	Blood	Promyelocytic Leukemia HL-60	None
QZ	Human	Adult	Brain	Caudate Nucleus	None
RA	Human	Adult	Brain	Substantia Nigra	None
RB	Human	Adult	Kidney	293 embryonal carcinoma line	None

RC	Human	Adult	Kidney	293 embryonal carcinoma line	None
RD	Human	Adult	Kidney	293 embryonal carcinoma line	None
RE	Human	Adult	Brain	Amygdala	None
RF	Human	Adult	Bone Marrow	N/A	None
RG	Human	Adult	Blood	Promyelocytic Leukemia HL-60	None
RH	Human	Adult	Blood	Promyelocytic Leukemia HL-60	None
RI	Human	Adult	Brain	Subthalamic Nucleus	None
RJ	Human	Adult	Neural	Neuroepithelioma HTB-10 line	None
RK	Human	Adult	Tumor	ColorectalAdenocarcinomaSW480	None
RL	Human	Fetal	Kidney	293 cell line	None
RM	Human	N/A	Brain	Neuroectodermal Tumor CRL-2060	None
RN	Human	Adult	Blood	LymphoblasticLeukemiaMOLT-4	None
RP	Human	Adult	Brain	Thalamus	None
RQ	Human	Fetal	Kidney	N/A	None
RR	Human	Fetal	Kidney	N/A	None
RS	Human	Adult	Tumor	ColorectalAdenocarcinomaSW480	None
RT	Human	N/A	Brain	Neuroectodermal Tumor CRL-2060	None
RU	Human	Adult	Adrenal corte	Carcinoma SW-13	None
RV	Human	Adult	Brain	Cerebellum	None
RW	Human	N/A	Brain	Neuroectodermal Tumor CRL-2060	None
RX	Human	N/A	Nasal Epithel	squamous cell carcinoma CCL-30	None
RY	Human	Adult	Ovary	Ovarian Adenocarcinoma HTB-161	None
RZ	Human	Adult	Brain	Cerebellum	None
S	Human	Adult	Neural	Glioblastoma line TG-1	N/A
SA	Human	Fetal	Heart	18 weeks gestation	None
SB	Human	Fetal	Whole Embryo	N/A	None
SC	Human	Fetal	Kidney	293 cell line	None
SD	Human	Fetal	Kidney	N/A	None
SE	Human	Fetal	Kidney	N/A	None
SF	Human	Adult	Bladder	Carcinoma 5637	None
SG	Human	Fetal	Heart	18 weeks gestation	None
T	Mouse	Fetal	Brain	N/A	None
V	Mouse	Fetal	Brain	N/A	None
WA	Xenopus	Fetal	Embryo	Dorsal Mesoderm	None
WC	Xenopus	11-12	Embryo	Fetal Vent. Mesoderm/Ectoderm	N/A
WF	Xenopus	Fetal	Embryo	Dorsal Mesoderm	None
WG	Xenopus	Fetal	Embryo	Dorsal Mesoderm	None

WH	Xenopus	Fetal	Embryo	Dorsal Mesoderm	None
WI	Xenopus	Fetal	Embryo	Dorsal Mesoderm	None
WJ	Xenopus	11-12	Embryo	Fetal Vent. Mesoderm/Ectoderm	N/A
WK	Xenopus	11-12	Embryo	Fetal Vent. Mesoderm/Ectoderm	N/A
WL	Xenopus	Fetal	Embryo	Dorsal Mesoderm	None
Z	Rat	Fetal	Pancreas	N/A	None

<u>Table 3 Cell Type and Treatment Key:</u>

RA: retinoic acid

What is claimed is:

1. An isolated polynucleotide comprising a nucleotide sequence selected from the group consisting of:

SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, SEQ ID NO:14, SEQ ID NO:15, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, SEQ ID NO:24, SEQ ID NO:25, SEQ ID NO:26, SEQ ID NO:27, SEQ ID NO:28, SEQ ID NO:29, SEQ ID NO:30, SEQ ID NO:31, SEQ ID NO:32, SEQ ID NO:33, SEQ ID NO:34, SEQ ID NO:35, SEQ ID NO:36, SEQ ID NO:37, SEQ ID NO:38, SEQ ID NO:39, SEQ ID NO:40, SEQ ID NO:41, SEQ ID NO:42, SEQ ID NO:43, SEQ ID NO:44, SEQ ID NO:45, SEQ ID NO:46, SEQ ID NO:47, SEQ ID NO:48, SEQ ID NO:49, SEQ ID NO:50, SEQ ID NO:51, SEQ ID NO:52, SEQ ID NO:53, SEQ ID NO:54, SEQ ID NO:55, SEQ ID NO:56, SEQ ID NO:57, SEQ ID NO:58, SEQ ID NO:59, SEQ ID NO:60, SEQ ID NO:61, SEQ ID NO:62, SEQ ID NO:63, SEQ ID NO:64, SEQ ID NO:65, SEQ ID NO:66, SEQ ID NO:67, SEQ ID NO:68, SEQ ID NO:69, SEQ ID NO:70, SEQ ID NO:71, SEQ ID NO:72, SEQ ID NO:73, SEQ ID NO:74, SEQ ID NO:75, SEQ ID NO:76, SEQ ID NO:77, SEQ ID NO:78, SEQ ID NO:79, SEQ ID NO:80, SEQ ID NO:81, SEQ ID NO:82, SEQ ID NO:83, SEQ ID NO:84, SEQ ID NO:85, SEQ ID NO:86, SEQ ID NO:87, SEQ ID NO:88, SEQ ID NO:89, SEQ ID NO:90, SEQ ID NO:91, SEQ ID NO:92, SEQ ID NO:93, SEQ ID NO:94, SEQ ID NO:95, SEQ ID NO:96, SEQ ID NO:97, SEQ ID NO:98, SEQ ID NO:99, SEQ ID NO:100, SEQ ID NO:101, SEQ ID NO:102, SEQ ID NO:103, SEQ ID NO:104, SEQ ID NO:105, SEQ ID NO:106, SEQ ID NO:107, SEQ ID NO:108, SEQ ID NO:109, SEQ ID NO:110, SEQ ID NO:111, SEQ ID NO:112, SEQ ID NO:113, SEQ ID NO:114, SEQ ID NO:115, SEQ ID NO:116, SEQ ID NO:117, SEQ ID NO:118, SEQ ID NO:119, SEQ ID NO:120, SEQ ID NO:121, SEQ ID NO:122, SEQ ID NO:123, SEQ ID NO:124, SEQ ID NO:125, SEQ ID NO:126, SEQ ID NO:127, SEQ ID NO:128, SEQ ID NO:129, SEQ ID NO:130, SEQ ID NO:131, SEQ ID NO:132, SEQ ID NO:133, SEQ ID NO:134, SEQ ID NO:135, SEQ ID NO:136, SEQ ID NO:137, SEQ ID NO:138, SEQ ID NO:139, SEQ ID NO:140, SEQ ID NO:141, SEQ ID NO:142, SEQ ID NO:143, SEQ ID NO:144, SEQ ID NO:145, SEQ ID NO:146, SEQ ID NO:147, SEQ ID

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or a complement of said sequence.

2. An isolated polynucleotide consisting of a nucleotide sequence selected from the group consisting of:

SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, SEQ ID NO:14, SEQ ID NO:15, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, SEQ ID NO:24, SEQ ID NO:25, SEQ ID NO:26, SEQ ID NO:27, SEQ ID NO:28, SEQ ID NO:29, SEQ ID NO:30, SEQ ID NO:31, SEQ ID NO:32, SEQ ID NO:33, SEQ ID NO:34, SEQ ID NO:35, SEQ ID NO:36, SEQ ID NO:37, SEQ ID NO:38, SEQ ID NO:39, SEQ ID NO:40, SEQ ID NO:41, SEQ ID NO:42, SEQ ID NO:43, SEQ ID NO:44, SEQ ID NO:45, SEQ ID NO:46, SEQ ID NO:47, SEQ ID NO:48, SEQ ID NO:49, SEQ ID NO:50, SEQ ID NO:51, SEQ ID NO:52, SEQ ID NO:53, SEQ ID NO:54, SEQ ID NO:55, SEQ ID NO:56, SEQ ID NO:57, SEQ ID NO:58, SEQ ID NO:59, SEQ ID NO:60, SEQ ID NO:61, SEQ ID NO:62, SEQ ID NO:63, SEQ ID NO:64, SEQ ID NO:65, SEQ ID NO:66, SEQ ID NO:67, SEQ ID NO:68, SEQ ID NO:69, SEQ ID NO:70, SEQ ID NO:71, SEQ ID NO:72, SEQ ID NO:73, SEQ ID NO:74, SEQ ID NO:75, SEQ ID NO:76, SEQ ID NO:77, SEQ ID NO:78, SEQ ID NO:79, SEQ ID NO:80, SEQ ID NO:81, SEQ ID NO:82, SEQ ID NO:83, SEQ ID NO:84, SEQ ID NO:85, SEQ ID NO:86, SEQ ID NO:87, SEQ ID NO:88, SEQ ID NO:89, SEQ ID NO:90, SEQ ID NO:91, SEQ ID NO:92, SEQ ID NO:93, SEQ ID NO:94, SEQ ID NO:95, SEQ ID NO:96, SEQ ID NO:97, SEQ ID NO:98, SEQ ID NO:99, SEQ ID NO:100, SEQ ID NO:101, SEQ ID NO:102, SEQ ID NO:103, SEQ ID NO:104, SEQ ID NO:105, SEQ ID NO:106, SEQ ID NO:107, SEQ ID NO:108, SEQ ID NO:109, SEQ ID NO:110, SEQ ID NO:111, SEQ ID NO:112, SEQ ID NO:113, SEQ ID NO:114, SEQ ID NO:115, SEQ ID NO:116, SEQ ID NO:117, SEQ ID NO:118, SEQ ID NO:119, SEQ ID NO:120, SEQ ID NO:121, SEQ ID NO:122, SEQ ID NO:123, SEQ ID NO:124, SEQ ID NO:125, SEQ ID NO:126, SEQ ID NO:127, SEQ ID NO:128, SEQ ID NO:129, SEQ ID NO:130, SEQ ID NO:131, SEQ ID NO:132, SEQ ID NO:133, SEQ ID NO:134, SEQ ID NO:135, SEQ ID NO:136, SEQ ID NO:137, SEQ ID NO:138, SEQ ID NO:139, SEQ ID NO:140, SEQ ID NO:141, SEQ ID NO:142, SEQ ID NO:143, SEQ ID NO:144, SEQ ID NO:145, SEQ ID NO:146, SEQ ID NO:147, SEQ ID NO:148, SEQ ID NO:149, SEQ ID NO:150, SEQ ID NO:151, SEQ ID NO:152, SEQ ID NO:153, SEQ ID NO:154, SEQ ID NO:155, SEQ ID NO:156, SEQ ID NO:157,

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or a complement of said sequence.

3. An isolated polynucleotide consisting essentially of a nucleotide sequence selected from the group consisting of:

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or a complement of said sequence.

4. An isolated polynucleotide comprising a nucleotide sequence which hybridizes to a sequence selected from the group consisting of:

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or to a complement of said sequence.

5. An isolated protein encoded by an isolated polynucleotide of claim 1.

6. An isolated protein encoded by an isolated polynucleotide of claim 2.

7. An isolated protein encoded by an isolated polynucleotide of claim 3.

8. An isolated protein encoded by an isolated polynucleotide of claim 4.

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ccgctgctgc tcctgctggg cttgctgctc gcaggctccg tcgcccctgc gcgcctcgtc 120
ccgaagcgcc tttcccaact tggtggcttc tcctgggata actgtgatga aggaaaggac 180
cctgcagtga tcaaaagcct cacgatccaa cctgacccca ttgtggttcc tggagatgta 240
gtcgtcagcc ttgagggcaa gaccagcgtt ctcctcgag 279

<210> 13
<211> 222
<212> DNA
<213> Homo sapiens

<400> 13
gaattcgcgg ccgcgtcgac cctaaaccgt cgattgaatt ctagaccatt ccaggagcct 60
cggtgaagag aggatatcca tctgtgtagc cgcttctcta tacgggattc cagctccatg 120
gcagcccgtc tgctcctcct gggcatcctt ctcctgctgc tgcccctgcc cgtccctgcc 180
ccgtgccaca cagccgcacg ctcagagcgc aagcaactcg ag 222

<210> 14
<211> 473
<212> DNA
<213> Homo sapiens

<220>
<221> unsure
<222> (11)

<400> 14
gaattcgcgg ncgcgtcgac atcgtttttct ttatgtggga gaaggaagga gtaacataaa 60
acatgttttt atcactcaaa gtaagcaatg gaggtaacaa atattgtgca ttttaacagt 120
aatatttgaa gatttgtaga atattcacct ttaaaactag ttagtatgca tttataattt 180
taccagaata tacaactaac aattcaacag tgatgttctt tgcatttgtg gggagatgtg 240
tgatgttctt ggttttctgg tttggaatgg aacgtttata gccttgcctg taaaaatgtg 300
ccccagcact taatgagtga ccgtttgaat ccatatgtag tcccattggt gctaatgaga 360
gtagctgctg tgaaacagga ataaaatgtg tctgttcacg gaggtgcggt gtggatgcac 420
ctacaaggcc aactctctga tcagggtgag ggagagatgg aagaatgctc gag 473

<210> 15
<211> 228
<212> DNA
<213> Homo sapiens

<400> 15
gaattcgcgg ccgcgtcgac gccgggtatc aataaaggat ctttttaaga cagtttaaat 60
taggttttct gttacttaga acaaaatatc taaatgacac agaatctgaa gtggtcatta 120
ctatttgatt tccactctta tatgcttctg tcattgcttc cttgcatggt ggtgcgtgcg 180
tgcctgttgt cccagatatt caaggctgag gcaggaggat cactcgag 228

<210> 16
<211> 535
<212> DNA
<213> Homo sapiens

<220>
<221> unsure
<222> (21)

<400> 16
gaattcgcgg ccgcgtcgaa ncatgctctt cagaaaagta tacaaatggc tggcaggccc 60
aattccacct tcgctgggaa tccagtcctc acaagcccag gttcctaatc tgggcctatt 120
tccagctcca aatacagcgg tgatgcccaa gtctgttttt ccagccctaa cttgttccca 180
agcttcagac cagtcactgg gtgtatccag tcacctccca acatctcccc aggggccgag 240
aagggctgtg gccttcagcc catccctgta tactctttcc ttaccccttc cacatttttct 300
cctgtctccc ccatctagag gagtcacagg agcacccacc cggaaaccca ctccatgtcc 360
cactcctctc agtcaagtcc ccaagcgcca tcagcgctgc ctcctagcat ctcactccca 420
ctctctcctt ttcctcttca gtcccagcag ctcggctcag gggctcctg ctcaccttgg 480
gcttggatgc tacagaagcc tccctccaga accatctccc tccacgaggc tcgag 535

<210> 17
<211> 226
<212> DNA
<213> Homo sapiens

<400> 17
gaattcgcgg ccgcgtcgac ggggatactt tcaggcactg tcaatggcag tgctagggaa 60
tataaatgca tgtgtgttat acatctacac atatatctac atccatagga ttttattagg 120
agggtttttg tttttgtttg aggcaggttc tcactctgtt gcccaggctg aagtgcagtg 180
gtgcaatcac agctcactac tgcagcatca acctcctggg ctcgag 226

<210> 18
<211> 437
<212> DNA
<213> Homo sapiens

<400> 18
gaattcggcc aaagaggcct acacacacac acacacacac acacacacac acacacacac 60
acagaaacaa atggaggaga aagagatagt gtggtagcaa taaatagtgc ctggctttga 120

agtgaaagac ttgggtttga atattgactc tgcctcttct tagttccccc atctgctttc 180
tctatacctt ggttgcacat gaggagcaaa tcaaatgaaa aatgcttata aatgtgaacc 240
tgtgagggtt agtgtggtat acagtcatgt ccccagtttt ccatggggca tatattctaa 300
tactccccagc ggttgtctga aaccaccaaa atagtactcc actctaaata tactatgttt 360
ttttctatac atacatacct gtgataaagt ttaatttata aattaggcac agtaagagat 420
taacgacctg cctcgag 437

<210> 19
<211> 378
<212> DNA
<213> Homo sapiens

<400> 19
gaattcggcc aaagaggcct acaccattca tctttcttgg agacgttaaa actatccact 60
ggattcaata caactctgct ttccactaaa aattctttaa aatgtccctc aacctttttc 120
gtactgtaac catatgggag gtgatacagt gcctttcctt tgtgattaag gtcacggtag 180
tcacttggaa ggatccttta agcttccaga aatgacttaa tctctaagat attgcaaatt 240
gttcttcact cagtgagttg gttttgtttc caagtccgac ttctgagtac agcaagtgag 300
gtggcttcgg gcagtcagct cctgaccccc cctaaaaaga aagggcaggg cctgcagtgg 360
acagcagcca gactcgag 378

<210> 20
<211> 338
<212> DNA
<213> Homo sapiens

<400> 20
gaattcggcc aaagaggcct acacgcctct ccgggacaaa taccctttgt ctgaaaacca 60
caataataac accttcctca aacacttgga aaatcctccc acatcgcaga gaattgagcc 120
cagatatgac attgtgcatg cagtgggaga gcgtgtgcac agcgaggcca tctcaccggc 180
accggaggag aaagcggtca cgctccgcag cctcaggtct tggctctcac tgaaggacag 240
gcagctgtcc caggaggtca cccctgctga cctggagtgt ggtttggaag gtcaggcggg 300
gtccgtccaa agggccagtt tgatttggga agctcgag 338

<210> 21
<211> 559
<212> DNA
<213> Homo sapiens

<400> 21
gaattcggcc aaagaggcct agctaaatat tatgactggc tatagttaaa ataataataa 60
tacttttgtt tgtttgttta tagtaaaata ataataatac ttttgttttt ttgagacaga 120
gtctcactct gtctcccagg ctagagtgcg gcggtgagat ctcggcttgc tgcaacctcc 180
gcctcccggg tttatgcgat tctcctgcct cagcctcccg agtacctggg attacaggtg 240
cccgccacca cgcctggcta atttttttgt atttttaata gagatggggt ttcaccatgt 300
tggccaggct tgttttgaac tcctgatctc aagtgatctg ccggcctcgg cctcccaaag 360
ataataatac ttttaaaatg aaaggtagga aggaggcatt tgaaacaatg gtgagatgtt 420
aagcttgaga attatggaga ataactatcc tggtagaaaa aaacagaaat aaaatatggt 480
gatagttttg tttcaggttt tttacttgtt ttctcttttg tctttggaag gtctgtttgt 540
ttcaagtgag catctcgag 559

<210> 22
<211> 283
<212> DNA
<213> Homo sapiens

<400> 22
gaattcggcc aaagaggcct agttagaatg taaggtatat cattctaaag atagagtaaa 60
aagaaaacaa aaccaaaagt tattaaaatt gttgtccggt ttactttaac ttagttttgc 120
atagttctag tgcagctgaa attgaaaagt tatttccctt tagctgtgtt attatagagc 180

agaaattctg ttttaaaaa ttagcctaag atatacttgt ttttgtaaag aaaaatattt 240
aatgttgaac aaaataaatt ggagttggag tagaatactc gag 283

<210> 23
<211> 314
<212> DNA
<213> Homo sapiens

<400> 23
gaattcggcc aaagaggcct aatctacagt tgctgatgga cagagtggat gaaatgagcc 60
aagatatagt taaatacaac acatacatga ggaatactag taaacaacag cagcagaaac 120
atcagtatca gcagcgtcgc cagcaggaga atatgcagcg ccagagccga ggagaacccc 180
cgctcccctga ggaggacctg tccaaactct tcaaaccacc acagccgcct gccaggatgg 240
actcgctgct cattgcaggc cagataaaca cttactgcca gaacatcaag gagttcactg 300
cccaaaaact cgag 314

<210> 24
<211> 284
<212> DNA
<213> Homo sapiens

<400> 24
gaattcggcc aaagaggcct agcgacaagc aagtgcaaga aagttcattt gtaatttgtt 60
cagttgtctg tcttttgcac atctgcattc tgaccagaag gaactttgag gtttttctgc 120
agcacatgag catctgcggg ctctatcctc ttatagtagt tcttctttgt ctcaataatc 180
tcaaagccaa acttcctgta gaagtcaatt gccgactcat tgctgatctg gacatgcaga 240
taaatgttgt caaaagtacc atctttttca cagatgttct cgag 284

<210> 25
<211> 161
<212> DNA
<213> Homo sapiens

<400> 25
gaattcggcc aaagaggcct agtaggtgaa aatttataat atcaactgca cttaaaatat 60
ttgccagcca gcctcattca tcacatattt cctaaataag aataatcagg cagttttgac 120
agaaaaataa aatgtgtccc aaaagaagtc cgtacctcga g 161

<210> 26
<211> 672
<212> DNA
<213> Homo sapiens

<400> 26
gaattcggcc aaagaggcct agctaatttc ccttgacctc cagctggttt ccaagctgtt 60
ttaggagagg aagacagagt ttccaagtta ggagaggaag acagagttcc aagtgaatgc 120
catccacata ccaccttccc agaccccata gctcacaggc ccccataggt catcagctct 180
tactttctcc ctctggaaag gaatggaaga agaggtgaaa tgttacttca tttggaagcc 240
tcctaccatc tctatctgaa cctggctccc tctccctagg cagcaaaacc aaattcccaa 300
acctacctac gtcagcgatg gcctgcttga tatttcagag aagagggacc cctgaggact 360
tcacctcaga ttcttggaag aatgtgattc agtccacagt agcctttcag agactgtata 420
ctcaagccag accaaagtat ccctcttccc attcagagcc agtgaggacc tgtctctgtc 480
cctgctcctc ctgtgccctc tgtgtgcggt gtcctttccc atctcctgct ggcttacatg 540
gcttcaagct ccacctcaaa gcgtcctgca ccaggcattg ccagcgatct ccccttcaca 600
atggtctagc tcctatggtc tgtgtctcct tatttcttct gaccttcttt ctttcacccc 660
tgtgcactcg ag 672

<210> 27
<211> 144
<212> DNA

<213> Homo sapiens

<400> 27
gaattcgcgg ccgcgtcgac aagagccact ggcctgtaat tgtttgatat atttgttaaa 60
actctttgta taatgtcagg ttcaaggaca cactgttcca caatttcccg taagttgggg 120
ttttccattg cagctacccct cgag 144

<210> 28
<211> 250
<212> DNA
<213> Homo sapiens

<400> 28
gaattcgcgg ccgcgtcgac cctaaaccat ctacttccca gtcttctttc tagatttatt 60
cctttctttc cttcctctcc agttaggttg gagctttttc aattcttaga atataccaag 120
tttactccct accttaaggc cttcacattt gttgtctcaa cctgaatgct cttacattag 180
atacagtatg gtttgctcct ttatttcttt catatttctc ttcatatacc ttgtccccag 240
aaagctcgag 250

<210> 29
<211> 277
<212> DNA
<213> Homo sapiens

<400> 29
gaattcgcgg ccgcgtcgac cctcaggaac tatacaacag aaacaacaaa cacaagtgaa 60
aaaccctctg aacttagcag acctagatat gttttcctca gttaattgca gcagcgagaa 120
accattgtct ttttcagctg tgtttagcac atcaaaatca gtttctacac cacagtcaac 180
aggttctgct gctactatga cagcattggc agcaacaaaa acttctagtt tggctgatga 240
ttttggagaa ttcagccttt ttggggaatc actcgag 277

<210> 30
<211> 258
<212> DNA
<213> Homo sapiens

<400> 30
gaattcgcgg ccgcgtcgac tgtgaatgtt aatattcctg aaaagactac agcactgaat 60
aatatggatg gcaagaatgt taaagcaaaa ttggatcatg ttcaatttgc agaatttaag 120
attgacatgg attctaaatt tgaaaatagc aacaaagatt taaaggaaga attgtgccct 180
ggaaatctaa gtctagttga tacaaggcaa cacagttcag cacattcaaa tcaagataaa 240
aaagacgatg agctcgag 258

<210> 31
<211> 308
<212> DNA
<213> Homo sapiens

<400> 31
gaattcgcgg ccgcgtcgac gtctgcagtc caattaattt ctgaagtatt tctaaagaga 60
taaaattcca aactgtaaaa aggcaagttt taattccgtg ataaagtaca tttatgtgaa 120
atatttcatt ccttagtaat tcttgaggcg actgtgaaag gaggatggaa gaaatccagt 180
acttttactc tttacattgg acaagttatt tgtggagata attgctcaat ttcagtatga 240
gtgcagtgat tttgatgcag ttgtgttttt ctttttttatt ctttttgga gaaggctctc 300
agctcgag 308

<210> 32
<211> 338
<212> DNA
<213> Homo sapiens

<400> 32
gaattcgcgg ccgcgtcgac gtaaccaacc atttcagcat ctgggttgct actagcctca 60
gcatatttta tttgctcaag attgccaatt tctccaactt tatttttctt cacttaaaaa 120
ggagaattaa gagtgtcatt ccagtgatac tattggggtc tttgttattt ttggtttgtc 180
atcttgttgt ggtaaacatg gatgagagta tgtggacaaa agaatatgaa ggaaacgtga 240
gttgggagat caaattgagt gatccgacgc acgtttcaga tatgactgta accacgcttg 300
caaacttaat accctttact ctgtccctgt tactcgag 338

<210> 33
<211> 217
<212> DNA
<213> Homo sapiens

<400> 33
gaattcgcgg ccgcgtcgac tttgggggga agtaaaaatt actctattat taaagtgatt 60
gttacagcca ctgatctgta cattaaaaat ttgtgaaatt attacaaata aattaaagct 120
tggtaaaatt gattgaaaaa acgttatggg ccaggcgcag tggctcatgc ctgtaatctc 180
aacagtttgg gaggccaaag caagcggatc actcgag 217

<210> 34
<211> 395
<212> DNA
<213> Homo sapiens

<400> 34
gaattcgcgg ccgcgtcgac ctgaaatcta gccgatctcc attttctggg actatgacag 60
ttgatggaaa taaaaattca cctgctgaca catgtgtaga ggaagatgct acagttttgg 120
ctaaggacag agctgctaat aaggaccaag aactgattga aaatgaaagt tatagaacaa 180
aaaacaacca gaccatgaaa catgatgcta aaatgagata cctgagtgat gatgtggatg 240
acatttcctt gtcgtctttg tcatcttctg ataagaatga tttaagtgaa gactttagtg 300
atgattttat agatatagaa gactccaaca gaactagaat aactccagag gaaatgtctc 360
tcaaagaaga gaaacatgaa aatggggcac tcgag 395

<210> 35
<211> 183
<212> DNA
<213> Homo sapiens

<400> 35
gaattcgcgg ccgcgtcgac gggagcaagg ataaaagaac aacaaaagac agaaaatttt 60
taatactagg gaaattagag catgtttgtg gacagaagga gaacaatcag aagacaggaa 120
gagaaaatag aaaataaaat agaagcacct aaaccgtcga ttgaattctg gcctgcactc 180
gag 183

<210> 36
<211> 248
<212> DNA
<213> Homo sapiens

<400> 36
gaattcgcgg ccgcgtcgac gtttgaagtt cattgaactt tgtggatgtg taaattatgt 60
ttttcatcaa attgggcaag tttttagcca ttatttctcc taaatttttc tgctttttcg 120
tctgctacct tggttactcc cattacacat atgtcagtat atttaatggt atcccatact 180
tctctcatgc tctgttcatt tttctttatt cttttttctc tctcttcttc agatggcata 240
aactcgag 248

<210> 37
<211> 222
<212> DNA
<213> Homo sapiens

<400> 37
gaattcgcgg ccgcgtcgac cgagtcgggt gacaaagtga gaccctgtgt ctaaaaagag 60
agagagaaaa aaagctaagg ctattttcag gttaggtcag gcttagtaac aaaaactttt 120
tgtgaaatgc ttcgatcatt gtttgccctg ctcctaattt cccttaaaac ctcccggatc 180
agacaggtgg tctttgaaga tgagttcaca gcctccctcg ag 222

<210> 38
<211> 264
<212> DNA
<213> Homo sapiens

<400> 38
gaattcgcgg ccgcgtcgac gtctggcctt cttaatttct ccatctgtac ccttttttag 60
gtgagctcag atctgacctg tttttctgag ctgcagactt gtttatctaa ttgtctaatt 120
gacatccact tggatgtctg atagttatcc cagatctaac attggccaaa tcgctctttt 180
ttccccccaa atctcccttg atttctcctt taaacccccc ttctcaaagc tatgctcaaa 240
ctaaaattct taggagctct cgag 264

<210> 39
<211> 226
<212> DNA
<213> Homo sapiens

<400> 39
gaattcgcgg ccgcgtcgac cttacataaa tttccatact cctttttat tctgacgtta 60
tacaatgaag aaagcaaagt tgaaattgtc atgtcatatg tgccctgtta tgtatgccta 120
catacattgg gtatgtgaga ttgtggcggg gggtggttcc cctagctttt tgtctataat 180
ttctgatttt attgcaataa atttaaacta caacacagag ctcgag 226

<210> 40
<211> 257
<212> DNA
<213> Homo sapiens

<400> 40
gaattcgcgg ccgcgtcgac ctagtttatg agtttattct tctgctcgtt tttggagttt 60
gtttttgttt ttctagtttt tttaggtgcg aggtgaggtt gttaattgga cgtctatctc 120
cttggtgtag acgtttagtg ctgtctagtc ctcttaacac tgtgtttgtc gcaacccaga 180
ggttttggcc tgttttcatt ttttaacaaa tgattttgtt ttctgtcata atttttcttgt 240
ttacccaaaa cctcgag 257

<210> 41
<211> 220
<212> DNA
<213> Homo sapiens

<400> 41
gaattcgcgg ccgcgtcgac tgcaagtaag gactatggaa aatttccaaa ccagattgga 60
tcgttcagaa gccattcttc tgttgattct ttacactttc ctccccattag ccgaaagaat 120
tgagagccaa cctttccaaa tgcccctgtc cccgttagca ggcaccaaag agctcatttc 180
atttcctgct gccagcttaa tactcaccag ggcactcgag 220

<210> 42
<211> 289
<212> DNA
<213> Homo sapiens

<400> 42
gaattcgcgg ccgcgtcgac gttacttttgg caacaagttc ttttaccctt acccgtggta 60
tttgaaaaaa atcaaggtaa ctgtctgaat actttaatat cagctttgttt tgtgaattct 120

ctgaatactg tcaacactct tatctaagtt tgcctttatg atgcagtggc agcattttga 180
attacttttc aaagaatact gttcatatgc attgtttttg tgtttcaaac taaatacagg 240
cagttttgtg ccagctgtga tattgtgcat accatatgga cacctcgag 289

<210> 43
<211> 252
<212> DNA
<213> Homo sapiens

<400> 43
gaattcgcgg ccgcgtcgac tttaacttaa aaattggctg tcatctcaga atttaactta 60
aatttataca aatattttgg tagtagttaa taggtatatt ggtagtaatt tggtagtttg 120
gtacatttgg tagtaattaa taggtacatt ttctgcctgt gtagattgtt taagaaaaca 180
gtgataatta tgcaaagaaa tgttcaaata actgtttggg tagtgatttt ggcttattgg 240
gtcactctcg ag 252

<210> 44
<211> 162
<212> DNA
<213> Homo sapiens

<400> 44
gaattcgcgg ccgcgtcgac ctaagttcca cattttattt agattccact agttttccca 60
ttaatgtcca tttctgttct agaatccaat ccttttcctg tatgctatgg attatcagac 120
ccctcacttg ggttcctctt acatcaccaa gatgtgctcg ag 162

<210> 45
<211> 281
<212> DNA
<213> Homo sapiens

<400> 45
gaattcgcgg ccgcgtcgac cttcttattt ccttgctgat gcatatctgc cgagtcttgg 60
ttctgttttg ggcctcatgt ccagcaagtg atagtctcat taggagcgtg gtagaacata 120
gcgaagcctg gcatttggtt cctccctctg tctcccaaag tgctgggatt acaggcgtga 180
gccactgcgc ctggtctggt tcctccccgta tgtgtgccac ataccgtgag ccattcagat 240
ggatgaaagc aaacttccct ataaaaggcc agaagctcga g 281

<210> 46
<211> 265
<212> DNA
<213> Homo sapiens

<400> 46
gaattcgcgg ccgcgtcgac caccagacaa ctctatgagg gcagaaatta gatctatttt 60
gctcatcatt gtatctccag agtccaacac aatgcccagc attggagtaa ggtatttaaa 120
tattttaaaa aaattttttt tgagagacag ggtctcccta tgtcacccag gctggggtgc 180
agtggcaccc tcatggctca ctctaacagc ctcctgggct caagcagtca gaactacagg 240
tatgtgctac cacaccgagc tcgag 265

<210> 47
<211> 336
<212> DNA
<213> Homo sapiens

<400> 47
gaattcgcgg ccgcgtcgac aaagtgctag aaaatcatgt tccttgtcct gagtaagagt 60
taatcagagt aaatgcattt ctggagttgt ttctgtgatg taaattatga tcattattta 120
agaagtcaaa tcctgatctt gaagtgcttt ttatacagct ctctaataat tacaaatatc 180
cgaaagtcat ttcttggaac acaagtggag tatgctaaat tttatatgaa tttttcagat 240

tatctaagct tccaggtttt ataattagaa gataatgaga gaattaatgg ggtttatatt 300
tacattatct ctcaactatg tagcccgctt ctcgag 336

<210> 48
<211> 703
<212> DNA
<213> Homo sapiens

<400> 48
gaattcgcgg ccgcgtcgac gggacgtgaa attgacagtg aaaagtatgg cagatgagca 60
agaaatcatg tgcaaattgg aaagcattaa agagatcagg aacaagaccc tgcagatgga 120
gaagatcaag gctcgtttga aggctgagtt tgaggcactt gagtcagagg aaaggcacct 180
gaaggaatac aagcaggaga tggaccttct gctacaggag aagatggccc atgtggagga 240
actccgactg atccacgctg acatcaatgt gatggaaaac actatcaaac aatctgagaa 300
tgacctaaac aagctgctag agtctacaag gaggctgcat gatgagtata agccactgaa 360
agaacatgtg gatgccctgc gcatgactct gggcctgcag aggctccctg acttgtgtga 420
agaagaggag aagctttcct tggattactt tgagaagcag aaagcagaat ggcagacaga 480
acctcaggag ccccccatcc ctgagtccct ggccgctgca gccgctgccg cccaacagct 540
ccaagtggct aggaagcagg atactcggca gacggccacc ttcaggcagc agccccccacc 600
tatgaaggcc tgcttgtcat gtcaccagca aattcaccgg aatgcaccta tatgccctct 660
ttgcaaggcc aagagtcggt cccggaaccc caataaactc gag 703

<210> 49
<211> 247
<212> DNA
<213> Homo sapiens

<400> 49
gaattcgcgg ccgcgtcgac cacgtcatca gcatcacgta ctcatccctg cacatctcat 60
ggaaggctgg acacctcttc tcactacaag gcttcacctc ctctccggtg ccctcgcagg 120
ggtagccctg cgtgcccgtg gcctggcaca tgcggaagcg gcgctgccag cctgtgtcac 180
acgtcttaga gcacaggctc cacgcattcc atggccccca cttgctatca gtggccgggc 240
actcgag 247

<210> 50
<211> 290
<212> DNA
<213> Homo sapiens

<400> 50
gaattcgcgg ccgcgtcgac aaataatacg tattccatac tcaggatagc tggttagcta 60
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cttccttgtc accaaggctg ttgaccttaa ataaacatta agttgatttt gcacaacact 180
gtatttgtgt gtgtgcatgt gcctgttttt gtgtgtgtat gtttgtggga aataattatg 240
tttgtttccg catatattca tttttaatgc attctgtaac ttttctcgag 290

<210> 51
<211> 417
<212> DNA
<213> Homo sapiens

<400> 51
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tggaggctgt ggccgttttg tttttcttggc taaaatcggg ggagtgaggc gggccggcgc 120
ggcgcgacac cgggctccgg aaccactgca cgacggggct ggactgacct gaaaaaaatg 180
tctggatttc tagagggctt gagatgctca gaatgcattg actgggggga aaagcgcaat 240
actattgctt ccattgctgc tggtgtacta ttttttacag gctggtggat tatcatagat 300
gcagctgtta tttatcccac catgaaagat ttcaaccact catacccatgc ctgtggtgtt 360
atagcaacca tagccttcct aatgattaat gcagtatcga atggacaagt cctcgag 417

<210> 52
<211> 379
<212> DNA
<213> Homo sapiens

<400> 52
gaattcgcgg ccgcgtcgac tgaagatgct gcggctggca ctaactgtga catctatgac 60
ctttttttatc atcgcacaag cccctgaacc atatattgtt atcactggat ttgaagtcac 120
cgttatctta tttttcatac ttttatatgt actcagactt gatcgattaa tgaagtggtt 180
attttggcct ttgcttgata ttatcaactc actggtaaca acagtattca tgctcatcgt 240
atctgtgttg gcactgatac cagaaaccac aacattgaca gttggtggag ggtgtttgc 300
acttgtgaca gcagtatgct gtcttgccga cggggccctt atttaccgga agcttctgtt 360
caatcccagc ggactcgag 379

<210> 53
<211> 105
<212> DNA
<213> Homo sapiens

<400> 53
gaattcgcgg ccgcgtcgac aagaagcgta tggactacta tgactctgaa caccatgaag 60
actttgaatt tatttcagga acacgaatgc gcaaactcgc tcgag 105

<210> 54
<211> 237
<212> DNA
<213> Homo sapiens

<400> 54
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ccagctgtgg tcaggtacag tgctaagcac tttaattaca ctgttaagtc accaggacag 120
aaactccccc acaccagctc tgtaataggg gtgagtgttg gacataagca gggagttgac 180
aagaagccaa gactaggctg ggcacagtgg ctcacgcctg taattccagc cctcgag 237

<210> 55
<211> 220
<212> DNA
<213> Homo sapiens

<400> 55
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ctgttttttt ttaaataaag caatttgttc taataattat ttcctaatca tcttaaaata 120
cgctgtcatt aacggcagag aaagctcttt atttcctttt gaattttaat actgggtaga 180
aatataattt acaatgaaag tcagcaggaa agaactcgag 220

<210> 56
<211> 247
<212> DNA
<213> Homo sapiens

<400> 56
gaattcgcgg ccgcgtcgac caaaaataaa taagctcagg aataaagtga attggaagac 60
agaaataatt tctgaaatga accagatata tgaggataat gataaagatg cacatgtcca 120
agaaagctat acaaaagatc ttgatttraa agtaaataaa tctaaacaaa aacttgaatg 180
ccaagacatt atcaataaac actatatgga agtcaacagt aatgaaaagg aaagttgtaa 240
tctcgag 247

<210> 57
<211> 229
<212> DNA

<213> Homo sapiens

<400> 57
gaattcgcgg ccgcgtcgac gtgtgttgga aaacactgtg ggctcaatga aaaacccctt 60
tcggcccagt cctttgcctc cacattccag cttggcgccc tcagccacac cactctggat 120
gagttccaag atcttgttgt actgtttctt atcaatctgg ggaccctgct cagtggtggg 180
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<210> 58
<211> 146
<212> DNA
<213> Homo sapiens

<400> 58
gaattcgcgg ccgcgtcgac tgagggagag attggtcagt ctgttcaaaa ttacagatag 60
gaagaagagt aagttctggt gttctcttgc acagtagggt aactatggtt aacaatattg 120
catatttcaa aacagctggc ctcgag 146

<210> 59
<211> 139
<212> DNA
<213> Homo sapiens

<400> 59
gaattcgcgg ccgcgtcgac cctgcacctt gtctgtctga caaacacctt cttatttgat 60
gctattcaag cctcacctcc tcttactctg cactcctttc tactttcatc ttccagatga 120
aaataaccac ttcctcgag 139

<210> 60
<211> 325
<212> DNA
<213> Homo sapiens

<400> 60
gaattcgcgg ccgcgtcgac cctttccgtt tgatttgtca ctgcttcaat caataacagc 60
cgctccagag tcagtagtca atgaatatat gaccaaatat caccaggact gttactcaat 120
gtgtgccgag cccttgccca tgctgggctc ccgtgtatct ggacactgta acgtgtgctg 180
tgtttgctcc ccttcccctt ccttctttgc cctttacttg tctttctggg gtttttctgt 240
ttgggtttgg tttggttttt atttctcctt ttgtgttcca aacatgaggt tctctctact 300
ggtcctctta accatggtgc tcgag 325

<210> 61
<211> 241
<212> DNA
<213> Homo sapiens

<400> 61
gaattcgcgg ccgcgtcgac tcttattcct tcttgaaaat tttaagtgtt atggttttat 60
atagtttcagt tctttgagat ttttgaaaag agtattttca gtaataaacg tgccatctct 120
atctcttaaa catttattac aacaattgtt ttaaaataga aaaaataaaa tgcttctatt 180
ttaccttttt ttcatttcag aagcattatt ctgtttatta acagtgtccc atctcctcga 240
g 241

<210> 62
<211> 392
<212> DNA
<213> Homo sapiens

<400> 62
gaattcgcgg ccgcgtcgac gcacgtggca ctggaggagc ggcgttttgc acccccaggc 60
ttcagggaag ttctcaatag aaaacccatt agttgtctca tatgactggt attaactctg 120

acttaaaaaa aaaatcaagc cagaaacagt gtgttgagca agaaaggaaa aaagattcct 180
tattaaaagt tcaaacataa acagaaggct caggacctcc ttgactacct ctcttgccac 240
gtggcccagg agaaaccatg gctggcagtt taacagccac cctcctgctt ctgctctgtg 300
cattttgtgg atgcacatcc acgtttttct ttcttttga gacagggtct cactctgttg 360
cccaggctgg aatgcaatgg cgcgatctcg ag 392

<210> 63
<211> 293
<212> DNA
<213> Homo sapiens

<400> 63
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agaaagcagt gttctcacat cattttataa tgctgaggat gaatcaaatc ttctcttacc 120
taaactacct acactgccaa aaaactatag caacacctca aaaatattta gtgaagaaaa 180
ttctgatgaa attattaagc tcttgggaga cgtcaggctt aatattctcg tccttggagg 240
aagctctgga tttattgagc tttatgctta tggaatgttt aaaattgctc gag 293

<210> 64
<211> 449
<212> DNA
<213> Homo sapiens

<400> 64
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atctggaagg tctgggcaga tcacacattg cttcccccag tccttgtcct gacagaatgc 120
ccctaccatc acccactgag tctaggcaca gcctctccat ccctcctgtc tccagccctc 180
cggagcagaa agtgggtctt tatcgaagac aaactgaact tcaagacaaa agtgaatttt 240
cagatgtgga caagctagct tttaaggata atgaggagtt tgaatcatct tttgaatctg 300
cagggaacat gccaaggcag ttggaaatgg gcgggctttc tcctgccggg gatatgtctc 360
atgtggacgc tgctgcagct gctgtgcccc tctcatatca gcacccaagt gtagatcaga 420
aacaaattga agaacaaaag gaactcgag 449

<210> 65
<211> 247
<212> DNA
<213> Homo sapiens

<400> 65
gaattcgcgg ccgcgtcgac ggggctggag tataatagga gcggagagat agaaaagaga 60
tgcaaaggaa gatcacagcc atcacaaagc aatctaggca gaaagtgata ggaaaaaaag 120
gagaaactat tcattctcaa ctattgctgg tatacacaaa cctctgaaaa tagccaatta 180
gtgttagatg ttctatcagg cgtggggaat ggggatggtt acaaaattca tcctcccagt 240
tctcgag 247

<210> 66
<211> 227
<212> DNA
<213> Homo sapiens

<400> 66
gaattcgcgg ccgcgtcgac cgcggccgcg tcgacctgct ggcagggttt ttttgtttta 60
tttgtttgct tatttttaaa ttaactgttt tgagctttga atacttaagg ctttagaggg 120
agaacccaat tttcaattat gttggctttt tataaagctt gagttatgta agatttaaat 180
aaaagtttgc taccaagatg attgccttat tgaatagatc actcgag 227

<210> 67
<211> 384
<212> DNA
<213> Homo sapiens

<400> 67
gaattcgcgg ccgcgtcgac tgacattcct gttggagact tacatccagg ggaacagctg 60
gaaaaaatgt tgtatgttcg ctgtggaaca gggggttcca gaatgtttct tgtatatgtt 120
tcttacctga taaatacaac cgttgaagaa aaagaaattg tttgcaagtg tcacaaggat 180
gaaactgtaa caattgaaac agtctttcca tttgatgttg cggttaaatt tgtttctacc 240
aagtttgagc acctggaaag ggtttatgct gacatcccct ttctgttgat gacggacctc 300
ttaagtgcct caccctgggc cctcactatt gtttccagtg agctccacct tgctccatcc 360
atgaccacag tggaccagct cgag 384

<210> 68
<211> 302
<212> DNA
<213> Homo sapiens

<400> 68
gaattcgcgg ccgcgtcgac ctaaaccgtc gattgaattc tagacctctc acccaagctc 60
ctctctcctt gcagtgaaga ccctcccctc cagtaacctt tttttcctgt gaaaacccct 120
caacccctttt tcaggacctc tctcaacccc atcttcccat ttgtgtccca ccagtcccct 180
ccccaacctg ccaatatttc aataacccca cgcccaccag ttgctgccgc ttttctgccc 240
caatgcacat accctggaac ctggtttctc tccttcgttg gggcccaacc cccctcctcg 300
ag 302

<210> 69
<211> 184
<212> DNA
<213> Homo sapiens

<400> 69
gaattcgcgg ccgcgtcgac gatacaatct gcaaatgata aaaatttcga cgatgaagat 60
tctgtggatg gtaacagacc ttcctctgct agttctacat catccaaggc tccaccaagt 120
tctcggagaa acgttggaat gggaaccacc cgccggcttg gttcatccac ccttggacct 180
cgag 184

<210> 70
<211> 262
<212> DNA
<213> Homo sapiens

<400> 70
gaattcgcgg ccgcgtcgac caaaaacaaa acaaaacaaa aaaactttgc ccacttcttt 60
ttatattgtt gtgtcttctg aggttatcac ctgaagggat atttatggac tgaagagttg 120
ttagtattat ttgtgtatct tttactttgt tagaatacat acttatcttc taatgaaatt 180
attccagaaa actttaaaag agtcatttaa attgcctgtt agtatagtta taaaattgac 240
agagcagtgg caaaaactcg ag 262

<210> 71
<211> 166
<212> DNA
<213> Homo sapiens

<400> 71
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catgatgatg gtgaaactgc agcaatcatt ttatgcaatg tctgtggaaa tttatgtaca 120
gactgtgaca gattccttca ccttcatcga agaaccacaa ctcgag 166

<210> 72
<211> 370
<212> DNA
<213> Homo sapiens

<400> 72
gaattcgcgg ccgcgtcgac cctaaaccgt cgattgaatt gtaagccaaa ctgtcgttaa 60
gtcggggact gtctgtatac cctaaagtga tttccttatc cttcccaaaa ccgactcttc 120
ctatattatc tgatttaaga aataggagta ataccactta ccttacagct tcctgggtca 180
ctctctcatt gagttaacca atagatcttt gaattcctaa ccttttcct atccatcctt 240
ccctttcag tgttctgttc ctatgctagt tcatgccttc ttacatctct tgctgaggtt 300
tttccatatt ctcgtaactt gtctccttgc gtctactctt cagtctgtct tccttaccac 360
cagactcgag 370

<210> 73
<211> 287
<212> DNA
<213> Homo sapiens

<400> 73
gaattcgcgg ccgcgtcgac ggcaccaagc ggaaaataaa ctccaacctg ggcaacagag 60
caagactctg tctaaaaaaa aaaaaaagtt aatggcattt ctatccctgt cttgctaact 120
agaaacctgg gaggagactc aagactgttc tcttcagtca gcttcccatg cctattttat 180
atcccactag tttattttat gagctatgtc tcaaaatcat actcttctct ctttgtctct 240
cttacttgat cattggtcag gcctgtacct tcagccaccc tctcgag 287

<210> 74
<211> 212
<212> DNA
<213> Homo sapiens

<400> 74
gaattcgcgg ccgcgtcgac ccaatgagga aggcaaagaa aatcgagacc gggacagaga 60
ctatagtcgg cgacgtggtg ggccaccaag acgggggaga ggtgccagcc gtggacgaga 120
gtttcgaggt caggaaaatg gattggatgg caccaagagt ggagggcctt ctggaagagg 180
aacagaaaga ggcagaagga taccggctcg ag 212

<210> 75
<211> 314
<212> DNA
<213> Homo sapiens

<400> 75
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gactagttat aaattgacaa gttgtcggga aattttgcag caataaaggg ggcaagtgga 120
aggcagagca ctttctagat cttgactttt ccatggccca tgtaagatca ctaaactgtt 180
catttatttt tcgacagtta gcacctgctg ttgatatata ctaaatggcg ggaacatgtt 240
ttttttgttg tttgtttgtt ttgttttgtt ttgtttttcg agacggagtc tcgctctgtc 300
cccaagctct cgag 314

<210> 76
<211> 268
<212> DNA
<213> Homo sapiens

<400> 76
gaattcgcgg ccgcgtcgac aagtgagcac acgaaatcaa agcatgaaag cagaaaagaa 60
aagaggaaaa actatccaga atggcaggga attgtttgag tcttcccttt gtggagacct 120
tttaaatgaa gtacaggcaa gtgagcacac gaaatcaaag catgaaagca gaaaagaaaa 180
gaggaaaaaa agcaacaagc atgactcatc aagatctgaa gagcgcaagt cacacaaaat 240
ccccaaatta gaaccagagg acctcgag 268

<210> 77
<211> 295
<212> DNA

<213> Homo sapiens

<400> 77
gaattcgcgg ccgcgtcgac aattttaagt taagtcccat atgaaggctc aaaagagcgg 60
taaagaacaa cagcttgaca ttatgaacaa gcagtaccaa caacttgaaa gtcgtttgga 120
tgagatactt tctagaattg ctaaggaaac ggaagagatt aaggaccttg aagaacagct 180
tactgaaggc cagatagcag caaatgaagc cctgaagaag gatttagaag gtgttatcag 240
tgggttgcaa gaatacctgg ggaccattaa aggccaggca gctcaggccc tcgag 295

<210> 78
<211> 148
<212> DNA
<213> Homo sapiens

<400> 78
gaattcgcgg ccgcgtcgac acatactttg cattttccac tgttactttg ataccatttt 60
tagttgcgaa acacgtggca tgttctcgga aatgaatagc tttcaagata gtggagagat 120
tcctaacgtt gtcaaggctg agctcgag 148

<210> 79
<211> 224
<212> DNA
<213> Homo sapiens

<400> 79
gaattcgcgg ccgcgtcgac ataaatttgc tgcggctgga ctcaaggaac atctcaatgt 60
ctttctctct gaccttggga gcccacggga gccctttggg gcaagtcagc ctgtcagtct 120
gtgggtgctg tagcggggga ggcatcactt catcccgttc caggggaaac gtctccccct 180
ccagactgtt gtcatcatca ttctcctctt cctctactct cgag 224

<210> 80
<211> 288
<212> DNA
<213> Homo sapiens

<400> 80
gaattcgcgg ccgcgtcgac gtttcaaata aatgcttaaa gtttaatatt acttgaaggc 60
aagagaagac aaagaacccc caaaatatta gaaaagatta taaaagacat tataaggttg 120
gaattcttac tctttgaatt ccatatttgt tttattattt actaatgttc taatattaag 180
ttcatgataa gtcacacaca tatgttttct ccacactctt tccacctatc agtttttcta 240
acatattatt gttttaaaat tcttaatttt attacagcaa tcctcgag 288

<210> 81
<211> 251
<212> DNA
<213> Homo sapiens

<400> 81
gaattcgcgg ccgcgtcgac tttgaaggtt gtttgttgtt gttgattctt agaggcagat 60
atctgactac gttgtgttta tactttagct atatgaatgt ttacctattg aaaatactgt 120
tttattaaaa attactttgt tccttatacc ttaggagata aatgtacatt ttaaaagtgt 180
tcctcagtca ggtgaggtgg cttatgcctg taagttcaac acttggggag gccgaaccag 240
gaggactcga g 251

<210> 82
<211> 498
<212> DNA
<213> Homo sapiens

<400> 82

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aaggcacagc aggtggccag gaggcaacag gagcgaaagg ctgtgacaaa gaggagccct 120
gaggctccac agccagtgat agctatggaa gagccagcag taccggcccc actgcccaag 180
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gacaatgagg agcccccagc tctgccccct aggactctgg aaggcctcca ggtggaggaa 360
gagccagtgt acgaagcaga gcctgagcct gagcccgagc ctgagcccga gcctgagaat 420
gactatgagg acgttgagga gatggacagg catgagcagg aggatgaacc agagggggac 480
tatgaggagg tgctcgag 498

<210> 83
<211> 277
<212> DNA
<213> Homo sapiens

<400> 83
gaattcgcgg ccgcgtcgac cttcagtcca tcttacatat ggccaagttt gcttcctaaa 60
agttcagatg ttgtcatatt gctataatgc tcaagactct tccactcccc actgcctaag 120
gaattcagta cagacttctc agggcgcttt gaacacaaat ccaaccactc tacgcagccc 180
tatctcccac tgtcccctcc acaagcttca ttctttatta agatggggac tatctggtat 240
gcagatagcc agccacatct tcccctctgc cctcgag 277

<210> 84
<211> 526
<212> DNA
<213> Homo sapiens

<400> 84
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ctgggtgttt ttaacgagag tttgaacaaa gactcagaaa tggtttttaa aataacagtc 120
ccatgtggcc cacatagaaa atattgggat attttaaggt gtggattcac ttttccatat 180
ttaaacactt gtttctactt ggtgaaatac acaggtgaca agtcaacttc aggaataatg 240
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gagcctaaaa tctaggtcag agtcccgtat gaaagaaatc agataagttg agagagggcg 420
tgtgcaggtt ggaaatggtg gcgtccatct ctgctggggc gtcgatgcca cctggctgga 480
caggtggagc ctggaaggta gggaggctcg gaacatgaag ctcgag 526

<210> 85
<211> 307
<212> DNA
<213> Homo sapiens

<400> 85
gaattcgcgg ccgcgtcgac gtaaccccgg ctcccctcct cccccacccg ctggaaacca 60
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aggttcccac acgctgcttc ccacagcagc tgcaccattg tacattccaa cagcaacaga 300
gctcgag 307

<210> 86
<211> 194
<212> DNA
<213> Homo sapiens

<400> 86
gaattcgcgg ccgcgtcgac cgaggtattg gtgtaggaag agaaaaagag attgatgggg 60
taaatttgac tcacacatat atcatcaact catttcaag agatttgtcg tcatcaattg 120
attttcaaca gagacacgag agctagtcca tgaggaaagg aaagcatata acaaatttgc 180

tgggactact cgag 194

<210> 87
<211> 223
<212> DNA
<213> Homo sapiens

<400> 87
gaattcgcgg ccgcgtcgac atttggttct ttcctactca gaactactca gaaacaacta 60
tatatttcag gttatttgag cacagtgaaa gcagagtact atggttgtcc aacacaggcc 120
tctcagatac aaggggaaca caattacata ttgggctaga ttttgcccag ttcaaaatag 180
tatttgttat caacttactt tgttacttgt atcaatcctc gag 223

<210> 88
<211> 265
<212> DNA
<213> Homo sapiens

<400> 88
gaattcgcgg ccgcgtcgac gacaacatca aaagcaactg atgactctgg aaaacaagct 60
aaaggctgag atggatgaac atcgcctcag attagacaaa gatcttgaaa ctcagcgtaa 120
caattttgct gcagaaatgg agaaacttat caagaaacac caggctgcca tggagaaaga 180
ggctaaagtg atgtccaatg aagagaaaaa atttcagcaa catattcagg cccaacagaa 240
gaaagaactg aatagtttc tcgag 265

<210> 89
<211> 176
<212> DNA
<213> Homo sapiens

<400> 89
gaattcgcgg ccgcgtcgac aaattggaaa ctgtagaagt gttaatgtgt cctatggact 60
caatagcaga gtttattttt gtttttaatg gcaaggcttc tagagtcaat gattgtatga 120
gtttgctact ctggctgtgc ttacagcttc atccaagtac aaaggaagaa ctcgag 176

<210> 90
<211> 196
<212> DNA
<213> Homo sapiens

<400> 90
gaattcgcgg ccgcgtcgac ggtgtgttat tgtttttatt ggctgtacct ggtagaattg 60
aaaaatcagc atttctattg tagcctacta atttcagtga aatatttctt tagaaatata 120
aaatctggaa ctttccatca ttatgcctcc ccaaaataat agaggacttt acacacagat 180
aacacctgcc ctcgag 196

<210> 91
<211> 348
<212> DNA
<213> Homo sapiens

<400> 91
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tcaagctggg ctcacttgtg atttaggagg tatgaagtgg ggaatcagtc tttgtctacc 120
ttctgttccc tgcacccaga cctcctccac tttcttaggg taagaaatgc ctttgatagg 180
ggtaaagcct ttctttccag agtttgagat cagagacttc aatatgcaaa gtcttggggt 240
atgctgacag atcagcacac gtgcttttta tatttaaata attctcacaa cctatgtggc 300
ttgtcaggaa tgaagaatct aaagcttatt gtgctagggg cgctcgag 348

<210> 92

<211> 350
<212> DNA
<213> Homo sapiens

<400> 92
gaattcgcgg ccgcgtcgac gtctaatttc cttagtgctt gataattttt tattacggtc 60
tggagatttt atttaaaatt acttgtcaga ataattttga ggcttataat aaacatactt 120
tacttttaag agcaaagttt gcttctttac ccaggagcat tgtcagtcag ggaacaactt 180
aaaccaagtt ccttgagaac acattctaaa ttttttagaa cagcatctta ataaacaaaa 240
acaacactca cgtttcagat tttatatttt tgtttcccaa aggatttata tcactgtatt 300
tccaagtcat tgtcatgtta atgtctttca aatcaacatc tctgctcgag 350

<210> 93
<211> 286
<212> DNA
<213> Homo sapiens

<400> 93
gaattcgcgg ccgcgtcgac tttacatatt gtctattgct gcttttacac aagaacagca 60
gagttgtgta gttgcgacag agaccatatg gaccaccagg cctaaaatat ttactgtctg 120
actctttaca gaaaaagttt atctggcctc tagtctaacc tatcaatttt aaaaaaacag 180
ctttttggag aaagaattca catactgtgc aattcaccca tttatataca attcaatggg 240
ttttagtata ttcacagaga tgtgcaacca ccaccccagt ctcgag 286

<210> 94
<211> 140
<212> DNA
<213> Homo sapiens

<400> 94
gaattcgcgg ccgcgtcgac gcatgagcca ccatgcctgg ccccttttctt tcatctctcc 60
taatttttttc gacattctcc tacccatttt ctcctttcct gggccttcaa tttgtgccca 120
cctccacccc caccctcgag 140

<210> 95
<211> 176
<212> DNA
<213> Homo sapiens

<400> 95
gaattcgcgg ccgcgtcgac cgagtatttt actttattct tttaagaaac tgagtcattt 60
gtcctgttgt gtttcccctt atctggattt tgtaatcata tcctggaatg tggtttcaga 120
ggtgtctctg tcttttgtat ttcatgtcag tttatactcc agtcgataag ctcgag 176

<210> 96
<211> 601
<212> DNA
<213> Homo sapiens

<220>
<221> unsure
<222> (191)

<400> 96
gaattcgcgg ccgcgtcgac aaacaaaaga atcaaactac gctaaattga ttgaaatgaa 60
tggaggagga acctgcttta atcatgaatt agaaatgatc agacaaaagc ttcaatgtgt 120
agcttcaaaa ctacaggttc taccccagaa agcctctgag agactacagt ttgaaacagc 180
agatgatgaa natttcattt gggttcagga aaatattgat gaaattattt tacaactaca 240
gaaattaact ggccagcaag gtgaagagcc cagcttggtg tccccaagta cttcttgtgg 300
ctcattgact gaaagactac tgaaacaaaa tgctgagctg acagggcata tcagtcaact 360

gactgaagag aagaatgact taaggaacat ggttatgaag ctggaagagc agatcaggtg 420
gtatcgacag acaggagctg gtagagataa ttcttccagg ttttcattga atggtggtgc 480
caacattgaa gccatcattg cctctgaaaa agaagtatgg aacagagaaa aattgactct 540
ccagaaatct ttgaaaaggg cagaggctga agtatacaaa ctgaaagctg aaccgctcga 600
g 601

<210> 97
<211> 347
<212> DNA
<213> Homo sapiens

<400> 97
gaattcgcgg ccgcgtcgac gaagggaacg ttcagctgga aactggagat aaaataaact 60
ttgtaattga taacaataaa catactggtg ctgtaagtgc tcgcaacatt atgctgttga 120
aaaagaaaca agcccgctgt cagggagtag tttgtgccat gaaggaggca tttggcttta 180
ttgaaagagg tgatgttgta aaagagatat tctttcacta tagtgaattt aagggtgact 240
tagaaacctt acagcctggc gatgatgtgg aattcacaat caaggacaga aatggtaaag 300
aagttgcaac agatgtcaga ctattgcctc aaggaacagg gctcgag 347

<210> 98
<211> 351
<212> DNA
<213> Homo sapiens

<400> 98
gaattcgcgg ccgcgtcgac cttacctgtc ctaggggagt aggcaagcac ttccactagg 60
gaggggggtgg gggaaaggaa tgacacatga catacatggc atacacatta agcagttgat 120
catatgtctg actgggttcc agtttcttgg gaatgttggt ccccttgttc aggcttgcat 180
attttaaact aaaaatttca gtctattgtt tttagtaact tcatttatag tcctccataa 240
caagttagaa ggatgtatct gctaccattt attcctataa ttttagaaag ttggggcttg 300
acattatact catttagtga gagtagatgc aaaaaagtgc aggggctcga g 351

<210> 99
<211> 446
<212> DNA
<213> Homo sapiens

<400> 99
gaattcgcgg ccgcgtcgac gaagaaggaa ggcgcgagtg aggaaaggag gtactgtaga 60
tgccctccaa atccttggtt atggaatatt tggctcatcc cagtacactc ggcttggctg 120
ttggagttgc ttgtggcatg tgcctgggct ggagccttcg agtatgcttt gggatgctcc 180
ccaaaagcaa gacgagcaag acacacacag atactgaaag tgaagcaagc atcttgggag 240
acagcgggga gtacaagatg attcttgtgg ttcgaaatga cttaaagatg ggaaaaggga 300
aagtggctgc ccagttctct catgctgctg tttcagccta caagcagatt caaagaagaa 360
atcctgaaat gctcaaacaa tgggaatact gtggccagcc caaggtggtg gtcaaagctc 420
ctgatgaaga aaccctgacg ctcgag 446

<210> 100
<211> 266
<212> DNA
<213> Homo sapiens

<400> 100
gaattcgcgg ccgcgtcgac ccatccctct acgcgttttg gtccctgttt ggtgctttct 60
gtttgcagct acggcagtga gtatatctgg gcataggaac caatcagaaa caatcgcttc 120
agcaatcaag accattgttc atcatggagg aacccatgga tacctctgag cctctatctg 180
cattaccatt cactgggcag cagtcttttg agccaagtgg caaatttgga cagtatccat 240
cgatgcagat gaaccacata ctcgag 266

<210> 101

<211> 290
<212> DNA
<213> Homo sapiens

<400> 101
gaattcgcgg ccgcgtcgac aaaaaagtta ctgtatttta gactaaatgg gaaagataag 60
agatgatgct acagagtaat tcagaggcta aaacatgtag gggtcttgta ggccatattt 120
ctttaaaaaa cagattaaaa aaacttattt tgggaaaaaa ctttcggaga tggccaaaga 180
acatgacaac tgccatcata cccttcatct gtattcattc attattaacg ttttcctaca 240
tttgcttatt tctccgtata ggggtatttt tcaagactgc tgatctcgag 290
<210> 102
<211> 234
<212> DNA
<213> Homo sapiens

<400> 102
gaattcgcgg ccgcgtcgac gcagactgtg caagctccca gctgttcctt cttctgctgt 60
ccctagccaa caaacacagt ggcatttaca acttttggca tatagaaatt atatgtaaaa 120
attcaggtag tactatttct tttagtcctg ttagtctctt tctctctcta tatatatgta 180
tctctggaca tgcatctctg gttatatctt gaggcttttg ctgcaacccct cgag 234

<210> 103
<211> 240
<212> DNA
<213> Homo sapiens

<400> 103
gaattcgcgg ccgcgtcgac ggggccctgg tcacgcttga aaatggtctc actaagtaag 60
ttccggatga aattaaagaa aacactcctt aggtccttct tttctgcttg ttcttggtca 120
cctacaatgg gagcagactt aaggcaagat tcatcgggag ctacaggagg ttcattggca 180
ggaaagttgg tggtgccagc agcttcaacg aagctccgtg catcccttct tcccctcgag 240

<210> 104
<211> 154
<212> DNA
<213> Homo sapiens

<400> 104
gaattcgcgg ccgcgtcgac cgtcgattga attctagtcc tgtttctttg cctccccaac 60
aaacaccgtg ttccaagaaa tgccaagcct gaagaagaat gaaggtaggt ctgaaatttt 120
cagaggccca agcaagactc tggaatctct cgag 154

<210> 105
<211> 273
<212> DNA
<213> Homo sapiens

<400> 105
gaattcgcgg ccgcgtcgac ggtgttaggg gtttaaaggg agttgactga ataaggtcaa 60
gatctgctgg tcttgaaaat gaaacatctt cattatttca aatgtgtaac aactactgct 120
tgctatttgg cactatctgc ttctgtgctt catattaaat cctttaactt gcttcaatgt 180
gcatgtgctg gattgagagc cacttttgtc cccctgggcc cacaggaggg tcccggcgag 240
gacccccgcc ctctggctcc cggggcgctc gag 273

<210> 106
<211> 262
<212> DNA
<213> Homo sapiens

<400> 106

gaattcgcgg ccgcgtcgac gtggcctggg ctcctaatac aggtaaattg tctccaaagg 60
actagtaaag gtgactgggt catcctcctg ccccagggac actgattaga gaaaatccgt 120
ctgtgctggc aatacggcag tgctggacac tcggaattcc cttgaaggca aaagcaagga 180
acagagcgtg attaggtact ggacacctgc caagtgctgg gctctctcca gtttacagat 240
gaggaaactg aggctcctcg ag 262

<210> 107
<211> 259
<212> DNA
<213> Homo sapiens

<400> 107
gaattcgcgg ccgcgtcgac tgatggtata agtatttacc tgggacaagg ggcttcctta 60
tttggctaaa ttatctaaaa tgcataggaa gaatagaact tttagttggc tattttcctt 120
ttatctatct atctatctat ctatctatct atctatctat ctatcatctc gttctattgc 180
ccagactgga gtgcagaggt gcaatcatag ctcactgcag cctagaactc ctgggctcat 240
gcaattgtct cacctcgag 259

<210> 108
<211> 260
<212> DNA
<213> Homo sapiens

<400> 108
gaattcgcgg ccgcgtcgac ggttttacca tcctggctaa cacggtgaaa ccctgtctct 60
actaaaaata caaaaaatta gctgggatta caggcgtgag ccaccgcgcc cggccaaaat 120
aaaattttta aaaggatatt tacatcagtg tagtatgtga agtaaacaag aaaaagataa 180
aactcacttt ttaagtaaaa acagtcatgt gcttgaagta tgttgtaatc tttatcagaa 240
aagtatggga aggactcgag 260

<210> 109
<211> 255
<212> DNA
<213> Homo sapiens

<400> 109
gaattcgcgg ccgcgtcgac ttggattaca ggtccctgct gccacgccca gctaattttt 60
gtatttttag tagagatggg gtttctccat gttggctcag ctagtctcga actcctgacc 120
tcagatgatc tgccagcctc ggcctcccaa agtgatggga ttacaggcat gagccattgc 180
gcctggccca ggacatttat ttttattgct aaatacattt cagtcattta tgtatttgtt 240
ttctcccccc tcgag 255

<210> 110
<211> 423
<212> DNA
<213> Homo sapiens

<400> 110
gaattcgcgg ccgcgtcgac tccttcctag ccttggtcgt cgccgccacc atgaacaaga 60
agaagaaacc gttcctaggg atgcccgcgc ccctcggcta cgtgccgggg ctgggccggg 120
gcgccactgg cttcaccacg cggtcagaca ttgggcccgc ccgtgatgca aatgaccctg 180
tggatgatcg ccatgcaccc ccaggcaaga gaaccgttgg ggaccagatg aagaaaaatc 240
aggctgctga cgatgacgac gaggatctaa atgacaccaa ttacgatgag tttaatggct 300
atgctgggag cctcttctca agtggaccct acgagaaaga tgatgaggaa gcagatgcta 360
tctatgcagc cctggataaa aggatggatg aaagaagaaa agaaagacgg gagctatctc 420
gag 423

<210> 111
<211> 203
<212> DNA

<213> Homo sapiens

<400> 111
gaattcgcgg ccgcgtcgac attacctcat aagcattaac aaatcaggcc caaagagcgt 60
aagtcctaga aatttgtttt aaagcagccc tagtcatggt gctggtgcta ccgccttgtt 120
ttaggagcct gcctcctgtc agtatgaaac cctcacctga aaaatgccag cctggacacc 180
aaacactgag cccccttctc gag 203

<210> 112
<211> 257
<212> DNA
<213> Homo sapiens

<400> 112
gaattaagaa ttcgcggccg cgtcgacaaa aaaaaaaaaa aaaggatacc aaaattctca 60
agtcaaatta taagggtttt aacattccca tttctacacc acgtgcaaga aaaacaaaat 120
ccttgttttc tgcctgcctt tatggtccgt tctcattttc agcccccttt cctcattcta 180
ctctattaat tatgccttta tatggatgca aacttgtaaa atatgtggcc tattttgtgt 240
gtatacgtgg tctcgag 257

<210> 113
<211> 348
<212> DNA
<213> Homo sapiens

<400> 113
gaattcgcgg ccgcgtcgac gttggaggag gaggaagagg aagtcgaaga ctgtggcttc 60
cttttttgt tacttggaga ctcgtcgcta cgggtggaca ggtctttgac ttttgaggat 120
ttgctggttt tggttttgga tggcttgtgg gatggggaag ggatgacggc tggtatcggg 180
gacacggcgg atggggcctt gaaggttgag tccatgatgc tgagggttgc ggccacatga 240
gggaaagctg tggtgtggga catgagggcg ctcgggtccg gcgatgtcac gaaagctgcg 300
tttgagagca tggctgatgt catcatgtaa gaagaggtga gcctcgag 348

<210> 114
<211> 303
<212> DNA
<213> Homo sapiens

<400> 114
gaattcgcgg ccgcgtcgac gggattacag gcataagcca ccgtgcccgg cctgtagatt 60
tcattttag aaggtttgct tttaacagtt taaatttgta actcacataa aaaaaactta 120
ttataagaaa gagaaactag gtgttaggat aagtaaaaca ataagcattt ttgtctcttc 180
tgtttttgta gattttaatt gtttaactta ataaaatcac attaattggg gttcaactac 240
ttcacatttg taataacttt gggtgttaaa attgagatga aattcatcag gggaaaactc 300
gag 303

<210> 115
<211> 214
<212> DNA
<213> Homo sapiens

<400> 115
gaattcgcgg ccgcgtcgac aaaaaagaaa ggaagtggca tatttggtaa attgataaat 60
taccactgtc aaattatatt ggtgagtcta tatctattgt tgtccccaga tgttgccttt 120
gcaagaatta gtgtaaaatt ggaaaaaata ctcaatgttg aaagctgtca ttgttgagat 180
ctttatgaaa ttattgtgcc catgtccgct cgag 214

<210> 116
<211> 230
<212> DNA

<213> Homo sapiens

<400> 116
gaattcgcgg ccgcgtcgac tgcagatttt tctcttcacc tcatcaacag gtgatatagc 60
ccttttgggt gcttggcttt aagtacagtt cttagattca gctcctctac tttgtcaagt 120
ctaaatacta ttcctcagtg atgctgataa ccagcaaagt tttagtttct atgttgggca 180
tatttttggg gcagccctgt aaggatgtgc tccatggtac aagactcgag 230

<210> 117
<211> 195
<212> DNA
<213> Homo sapiens

<400> 117
gaattcgcgg ccgcgtcgac attaattttt cctgagagca gtagacttga ttagatgccc 60
ttttgtagtg tcatcaaatc ttagattatg agctcaaaga tttatctct atatacacaa 120
tttctaatat taaaaaaaat agtcgggccg ggtgcggtgg ctcaggcctg taatccagca 180
cttaaggggc tcgag 195

<210> 118
<211> 460
<212> DNA
<213> Homo sapiens

<400> 118
gaattcgcgg ccgcgtcgag aagatcctat tcaagagctg accatagaag aacatttgat 60
tgagagaaag aagaaattac aggagaagaa gatgcatatt gcagccttgg catctgccat 120
attatcagat ccagaaaata atattaaaaa attgaaagaa ttacgttcta tgttgatgga 180
acaagatcct gatgtggctg ttactgttcg aaagctggta attgtttctc tgatggagtt 240
atttaaagat attactcctt catataaaat ccggcccctc acagaagcag aaaaatctac 300
taagacccga aaagaaaccc agaagttaag agaatttgaa gaaggcctgg ttagccaata 360
caagttttat ttggaaaatc tggaacaaat ggttaaagat tggaagcaga ggaagctgaa 420
gaaaagtaat gtagtttcct taaaggcata cggactcgag 460

<210> 119
<211> 239
<212> DNA
<213> Homo sapiens

<400> 119
gaattcgcgg ccgcgtcgac cagacagatc aaatggaaag gctccccat cctgtcctct 60
acaccacctt gcagctgggc ctcagcaact gggcttttaa tttcagtcta attcaagtca 120
gcagcatagg gcagctcctg ggaaattggt ttacacatgc ggacaagccc agtagcccag 180
agctaaccca ctcaccatcc ctgaccacag aggagcagat aaggaagcaa gaactcgag 239

<210> 120
<211> 191
<212> DNA
<213> Homo sapiens

<400> 120
gaattcgcgg ccgcgtcgac tgggcatcat ctccataatc ttttcataaa gcatcaatga 60
tttcattatt cctctaccca aactttacaa gaagtatttt tttttttgag ccagtatctc 120
gctccatcac ccatgctgga atgcagtggc atgatcatag ctcactgcag cctcaacctc 180
ccaggctcga g 191

<210> 121
<211> 227
<212> DNA
<213> Homo sapiens

<400> 121
gaattcgctg ccgcgtcgac tttcttttga tcactatgcg gtgtcactat gtggtagtag 60
cgaggtcaga ctgtagcgag tgtttaaagt ttgcttcctt tgttttctgg gcttgtgggg 120
cttttttgtgg tacctgccct agcctagtca gtcattcccc atgctgcccc cttaggctag 180
agatgcccta ccgccctcag gcctcgctga atgtgccaaa cctcgag 227

<210> 122
<211> 166
<212> DNA
<213> Homo sapiens

<400> 122
gaattcgcgg ccgcgtcgac tgactcatag tcaagaccct ccaccagtaa catatattgg 60
cgagccagcc aggagaccac tacaggaaac actccattta ttccacctga cttcccactt 120
ggctgcatcc tcaaccattg aaatgaattt gaccctgata ctcgag 166

<210> 123
<211> 223
<212> DNA
<213> Homo sapiens

<400> 123
gaattcgcgg ccgcgtcgac ctaaaacccc agaatcatta ttgttgcatc tctttatttt 60
ccatctaatt attcatcaaa tagcagtaat gctttctttg aaatgtcttc tatatatctt 120
tgttttcgtt tctgcttttc atctcctcat ttctgttcct tcccctttccc cttctctcga 180
tttacttcta acagctttat gtccctttca gtcgaccctc gag 223

<210> 124
<211> 178
<212> DNA
<213> Homo sapiens

<400> 124
gaattcgcgg ccgcgtcgac cagactggca acaaactttt gagtgagtgt taagatacaa 60
gaaaccctaa aagttcctag gagaaatgac tttaaactta gaattccttt ttttaatttg 120
gtccacacag ggtctcactt tgttgcccag gctgctgtac aatggcccag atctcgag 178

<210> 125
<211> 226
<212> DNA
<213> Homo sapiens

<400> 125
gaattcgcgg ccgcgtcgac agaaaagcac aaattagttt taagtgaaaa gttgaaaagt 60
aagtccgata aattaacatt caccatttgt ttttttttaa taaaggtaaa aatcactaaa 120
ataaacagcc cactttaaca aaaaataggt gcaataaaac tataaaagag aaagcaaggg 180
agtgatgaac agaggttgta gggtgatgat acggaggata ctcgag 226

<210> 126
<211> 220
<212> DNA
<213> Homo sapiens

<400> 126
gaattcgcgg ccgcgtcgac gtttcaaagc cgtagacacc ttttattcag ggctggtaag 60
ctttcactggt gtttttggtc tcctgctttt tttttttttt ttaaatctga ttacaatggt 120
gttgcacact gttgtggttt atcgtttttt agtgatcctg ttgctcaata acccctccagt 180
gctctgctct gaaacagcac cagaacccca cccactcgag 220

<210> 127

<211> 216
<212> DNA
<213> Homo sapiens

<400> 127
gaattcgcgg ccgcgtcgac tcgtccagta ccagtgccac gcagtttaaa tagtgatatt 60
tcctattttg gtgttggggg caagcaagct gtcttctttg ttggacaatc agccagaatg 120
ataagcaaac ctgcagattc ccaagatgtt cacgagcttg tgctttctaa agaagatttt 180
gagaagaagg agaaaaataa agaggcagct ctcgag 216

<210> 128
<211> 180
<212> DNA
<213> Homo sapiens

<400> 128
gaattcgcgg ccgcgtcgac gcaaactagt aagtatgagg ttttcagctt caaatacaaa 60
accgtaatga tactagctga cattattgag tgcattcaga atactttagt ggacttttta 120
taagaattat taatatattc caaaggatta ggaatgttac ttttcatgtt ctccctcgag 180

<210> 129
<211> 204
<212> DNA
<213> Homo sapiens

<400> 129
gaattcgcgg ccgcgtcgac ttcctctcct ctctctcttg ccattttagc gtgcatgatt 60
tcattttttt tgttggcacc tgtaaggtgg tatctttttc ttgcccagcc ttgggttatg 120
gttacatctt cccattgctc attgcccacc ctccagttgg cacctctggt gcgctcctgg 180
ctgggtgaag ccgggcctct cgag 204

<210> 130
<211> 237
<212> DNA
<213> Homo sapiens

<400> 130
gaattcgcgg ccgcgtcgac ctgagggatg ctcatcttta acagtctccc tcatgtactt 60
ttgctgtttt acacagagaa acaggtagac cccacagagg agaaggaggg gattcaacag 120
ctttattgtc tggaagcagt gagatttggt gattgtctgg ggggattcct gggtttccct 180
gggtaccttg ttccaggcag tcagtccatt tgccttccta gtacaagccc cctcgag 237

<210> 131
<211> 250
<212> DNA
<213> Homo sapiens

<400> 131
gaattcgcgg ccgcgtcgac cttgtagata ccttttgaat ttaatgtcgt tagaattgct 60
tcttttttta atgctctatc taggtgaaag atatgatcct gagcccaaat caaaatggga 120
tgaggagtgg gataaaaaca agagtgcttt tccattcagt gataaattag gtgagctgag 180
tgataaaatt ggaagcacaa ttgatgacac catcagcaag ttccggagga aagatagaga 240
gactctcgag 250

<210> 132
<211> 258
<212> DNA
<213> Homo sapiens

<400> 132

gaattcgcgg ccgcgtcgac atttatttaa ataatatagt tccatatttt ttagtatatt 60
tacagagttg tgtaaccatt accacaatct aattttggaa cactgtcttg gctcctgaaa 120
gatcctgcaa accattagca gtcacttctc atttcctctt tccccagccc ctggcatcca 180
ctaatctact ttatgtctct atggatttgc ctactctggt tgtttcagat aacatttgga 240
ctttgtgaca gactcgag 258

<210> 133
<211> 139
<212> DNA
<213> Homo sapiens

<400> 133
gaattcgcgg ccgcgtcgac ctttcccaaa attcagaagt taatgggctt ttatgttttt 60
ctatattttt tttatttcaa tgatttggcc tgtctatgtt aggctaaaaa ataaccttgt 120
gtatgctacc aacctcgag 139

<210> 134
<211> 201
<212> DNA
<213> Homo sapiens

<400> 134
gaattcgcgg ccgcgtcgac ggagaagtaa gaattgtaag ggaggttcag tagtggggaa 60
ttctgtgaca gctgattgaa gatgatgatg aagaacctct gcattctagt taccctttgc 120
ttcccttcac ctcttgtaaa atttggcttg gcaacaatga cattgtcatg cttattgtcc 180
caatatccat ccaatctcga g 201

<210> 135
<211> 132
<212> DNA
<213> Homo sapiens

<220>
<221> unsure
<222> (84)

<400> 135
gaattcgcgg ccgcgtcgac ctcgaggttg tctaagagga aaccaaaaaa gagctggaag 60
agaacaagcg atccctggct gcantggatg cactcaatac tgatgatgaa aatgatgagg 120
agggtcctcg ag 132

<210> 136
<211> 190
<212> DNA
<213> Homo sapiens

<400> 136
gaattcgcgg ccgcgtcgac agaagacata ctaatagaac tccttgcttt taattgggga 60
aatagggctt taataatttt gacctcaact aaaaatgata tgcaatagtc tctgtgtgtg 120
tttgaaatac attgtgttct cagagatttc tacattctca cgttctagtg atttggggca 180
tagactcgag 190

<210> 137
<211> 220
<212> DNA
<213> Homo sapiens

<400> 137
gaattcgcgg ccgcgtcgac atcacaatca gaccgttggc tttgaatttg agtcgttggt 60
tcccatggtg agatgcttgt taagacttta tacttgggtc aatctctcac tttatttgt 120

agaaccattt gaaatcctag gatgtgcttt ttctggaagg atgacatggg cccagactga 180
acaagtcagc ttgatgatct taaatgatgg gcaactcgag 220

<210> 138
<211> 156
<212> DNA
<213> Homo sapiens

<400> 138
gaattcgcgg ccgcgtcgac tgcatttttt ggtatattaa tcttgtatcc tgtaaccttg 60
ataatgcatt tattagttca tagtgttttt tgcttctttt gttctttttct ggtaaatgcc 120
ttaggatttt cttttctcc cgactccccg ctcgag 156

<210> 139
<211> 239
<212> DNA
<213> Homo sapiens

<400> 139
gaattcgcgg ccgcgtcgac ctgaaaataa ggaaaatgtt agggacaaaa aaaagggcaa 60
catttttatt ggctctgtgg atgagcgcct ctgtttgctc ggacaaggcc gaaggaagca 120
gcagctctac tggctgcagg cttgacatcc gggtttctag ctctgaacga gaagcagagt 180
cctggaaact atcaaacaca acctcgcctg tggcaggctg cactcccaca atgctcgag 239

<210> 140
<211> 169
<212> DNA
<213> Homo sapiens

<400> 140
gaattcgcgg ccgcgtcgac cccgcctcaa cctcacgagt aagctgagac tgcaggctcc 60
accacaccca gcgaatttat ttatttttgt agagatgagg tttcaccttt ttgcccaggc 120
tggtctcaaa ctcctggcct caagtgatct gaccaccagc ggcctcgag 169

<210> 141
<211> 222
<212> DNA
<213> Homo sapiens

<400> 141
gaattcgcgg ccgcgtcgac aaaacgcctt atgatgaatc taagttctat attggctgtg 60
atctttgtac taactggtat catggagaat gtgttggcat cacagaaaag gaggctaaga 120
aaatggatgt gtacatctgt aatgattgta aacgggcaca agagggcagc agtgaggaat 180
tgtactgtat ctgcagaaca ccttatgatg agtcacctcg ag 222

<210> 142
<211> 198
<212> DNA
<213> Homo sapiens

<400> 142
gaattcgcgg ccgcgtcgac tgccaaattt tttaaatctc gaaattggtc ctaaaagaga 60
cttcatatat catctggttc aatgagagat ctttttactt tatttattat tttattttat 120
ttatttattt atttatttat ttttgagatt gtgccattcc actccagcct gggtgataaa 180
gctggactcc gactcgag 198

<210> 143
<211> 238
<212> DNA
<213> Homo sapiens

<400> 143
gaattcgcgg ccgcgtcgac tattcttgct ttgctggagg cagatctgaa ggatgtcatc 60
tctcctgtgg cttcttctag tgtggggtcc cgaagcctgg cttccccagc cgatgtgctg 120
ctttagtcag cgtctgccct ggtccttcgg ttcgcaggct cacacgcttt tttgggttgt 180
gtccctttgg actgcagagg ctacgtgtcc tgtgaccaac cacggaggcg gcctcgag 238

<210> 144
<211> 151
<212> DNA
<213> Homo sapiens

<400> 144
gaattcgcgg ccgcgtcgac ctaaagtcca gtgtttccag agacttttga aagtcaactt 60
acactttttc cttcttcatt cacaaagctc ttcttccctg ggccctggta tgtatgcctt 120
tctctcctac tgtctaatag cgagcctcga g 151

<210> 145
<211> 186
<212> DNA
<213> Homo sapiens

<400> 145
gaattcgcgg ccgcgtcgac caggatgctc tttctatccc attcatctac cttggtgttt 60
ctttgtcttg cctccttgct ctggtgtgtt gagcaatatg gggcaccttc atttctgcag 120
tcagagggtt ggccactggg aatgagaaga accacctctg taccttggga tgctgtgtca 180
ctcgag 186

<210> 146
<211> 460
<212> DNA
<213> Homo sapiens

<400> 146
gaattcgcgg ccgcgtcgac gggtcctgaa gccctctgtc tacctgggag accagggacc 60
acaggcctta gggatacagg gggtcccctt ctgttaccac cccccaccct cctccaggac 120
accactaggt ggtgctggat gcttgttctt tggccagcca aggttcacgg cgattctccc 180
catgggatct tgagggacca agctgctggg attgggaagg agtttcaccc tgaccattgc 240
cctagccagg ttcccaggag gcctcaccat actccctttc agggccaggg ctccagcaag 300
cccagggcaa ggatcctgtg ctgctgtctg gttgagagcc tgccaccgtg tgtcgggagt 360
gtgggccagg ctgagtgcat aggtgacagg gccgtgagca tgggcctggg tgtgtgtgag 420
ctcaggccta ggtgcgcagt gtggagacag gattctcgag 460

<210> 147
<211> 244
<212> DNA
<213> Homo sapiens

<400> 147
gaattcgcgg ccgcgtcgac caccttccat ccattttccc agtccagaaa tttaggagtt 60
atctctgatt ccttctttat tcttaatccc attttccata cataatcaag cccctgggtc 120
agtcagttct tgctgcccaa gatttctcaa ttctgtctgt ttgccatatg tgaatcatat 180
gctactgtgt taccttttgca ttagtcttag tttttcattt aaatatattc agtgtgagct 240
cgag 244

<210> 148
<211> 165
<212> DNA
<213> Homo sapiens

<400> 148

gaattcgcgg ccgcgtcgac atttcatgaa cttaggatgt gtttttattt catgaaaaac 60
ttagaatagt gaactattaa tatttaaaaa cgagaaatac aacatttaaa aaattaagag 120
tattttgcat tagtgattat gattcttatc ccaaaattcc tcgag 165

<210> 149
<211> 252
<212> DNA
<213> Homo sapiens

<400> 149
gaattcgcgg ccgcgtcgac gaagcctcat tggagcagat tgctttaaaa tctttttcct 60
tctaatttca ggattggcat ctcctgtctt tttcctgctt cttggcattt tagcatatct 120
ccagtagggt gtcctcgaat tctgaatacc aatttacgcc aaattatggt cattagtgtc 180
ctggctgctg ctgtttcact tttatatttt tctgttgtca taatccgaaa taagtatggg 240
cgagatctcg ag 252

<210> 150
<211> 136
<212> DNA
<213> Homo sapiens

<400> 150
gaattcgcgg ccgcgtcgac agacattgtt ctttagccat tgtatcttta atagtctttt 60
aaacacattc atctctgggc taaaaatgct ttttaaaaaa accaaaaaga gtacttttct 120
agaagcattg ctcgag 136

<210> 151
<211> 188
<212> DNA
<213> Homo sapiens

<400> 151
gaattcgcgg ccgcgtcgac cccaacctga agctgaagaa gccgccctgg ttgcacatgc 60
cgtcggccat gactgtgtat gctctggtgg tggtgtctta ctttcctcatc accggaggaa 120
taatttatga tgttattgtt gaacctccaa gtgtcggttc tatgactgat gaacatggac 180
acctcgag 188

<210> 152
<211> 181
<212> DNA
<213> Homo sapiens

<400> 152
gaattcgcgg ccgcgtcgac atttttactg caagttaatg ctggaaaaac agggcaattt 60
ttcacagaga gaacatccta ataatatcag tttagtacaa aatagcggca tcttagtgaa 120
cctgtattt ttccttttg ttgcagttgt tgctagaaaa cataatcgga aggacctcga 180
g 181

<210> 153
<211> 251
<212> DNA
<213> Homo sapiens

<400> 153
gaattcgcgg ccgcgtcgac caaccctctg gcttagtaag ttgtggtttt tctgaccttt 60
ttaaagtttg agaggacatt ttatttatat taaccaattt atttgaattt cagtctcaga 120
agtattaaat attagttcat aagattgtta atctgctggg tcaggcaaat acagaagagt 180
ttttcacttt attcttgatt attttactta tgatcatttc caatttagtt ggggtaataa 240
cctgcctcga g 251

<210> 154
<211> 224
<212> DNA
<213> Homo sapiens

<400> 154
gaattcgcgg ccgcgtcgac atttgttgag ttttgaccac tgcgcctggc tcatatttc 60
tttatatatc aaaacaattc agcttgcttc acttttatga aagctttatt atgagtttga 120
aagcaattct gcattttctt aacattgtaa ctggtgttga gttgaaggca ggcccctggg 180
agccctttgt gggcaattcc cttcactctg gaggctgcct cgag 224

<210> 155
<211> 145
<212> DNA
<213> Homo sapiens

<400> 155
gaattcgcgg ccgcgtcgac cttgtcttat tcctgatttt agggtgctca ctcttagtct 60
tttgccatta tattgtttta tgttggtttt ccataacctc actatgctga atagcagttt 120
ggcactctgt ctggtcgctc tcgag 145

<210> 156
<211> 163
<212> DNA
<213> Homo sapiens

<400> 156
gaattcgcgg ccgcgtcgac cagctatttt attttaaaag ccaaaatatt tttaaactag 60
ttttaaattt tgacgctttg aatagataac acttttacat ggttcaaaaa taatataaag 120
agctatacat tgaaaaatgt tgcttccact cctgttcctc gag 163

<210> 157
<211> 197
<212> DNA
<213> Homo sapiens

<400> 157
gaattcgcgg ccgcgtcgac agagcttact gagttaattg ccaggagatg tatctaagtc 60
agaggttgga gttgctcctc tgtgttttgc tgggttcgtg cagagctgct tttgtaccag 120
gtttctacca cttggggtgc tttttgcttt tcttttcact tcccacatct caagcacctg 180
ctgcgggtca gctcgag 197

<210> 158
<211> 255
<212> DNA
<213> Homo sapiens

<400> 158
gaattcgcgg ccgcgtcgac ttaaaatttt gtgaagcgtc gcatattttt tcagttattt 60
tagtattaac aaacaaattg aagatcattg gtttatataa ccccctgaga gactaatagt 120
agaatagaac agaataatag aatagaatag aacagaatag aataatagaa tagaattata 180
ggtatgagcc gtggtgcctg gcctctaata gtttttttgt tgttgttgtt gttgtttttt 240
atggcttccc tcgag 255

<210> 159
<211> 150
<212> DNA
<213> Homo sapiens

<400> 159

gaattcgcgg ccgcgtcgac tggagtggga tggaatttag caaaggtaca tagaacaaca 60
gtgatcacat tgcttaagag tttctggttt tttttgtttt ttgttttttt tgagatggag 120
tcaggctctg tcgcccaggc tggactcgag 150

<210> 160
<211> 114
<212> DNA
<213> Homo sapiens

<400> 160
gaattcgcgg ccgcgtcgac cttattccaa cattttcttt aaaacaccag caaacgtatt 60
tgtgaatctc tcttatcctt gaaacttctt atgctgttga taaacttact cgag 114

<210> 161
<211> 166
<212> DNA
<213> Homo sapiens

<400> 161
gaattcgcgg ccgcgtcgac ctatgaatca cgatactacg atgatcctcg ggaatacagg 60
gattacagga atgatcctta tgaacaagat attagggaat atagttacag gcaaagggaa 120
cgagaaagag aacgtgaaag atttgagtct gaccagggac ctcgag 166

<210> 162
<211> 182
<212> DNA
<213> Homo sapiens

<400> 162
gaattcgcgg ccgcgtcgac attctttgtt acccttttaca agtataagtg tttacaagta 60
taagtgttac cttacatgga aacgaagaaa caaaattcat aaatttaaat tcataaattt 120
agctgaaaga tactgattca atttgtatac agtgaatata aatgagacga cagcttctcg 180
ag 182

<210> 163
<211> 217
<212> DNA
<213> Homo sapiens

<400> 163
gaattcgcgg ccgcgtcgac cttttttctc tctctctttt aaataaacac aagcttcaaa 60
taagcacaca ataatgctgg gcaagcctac tgggatttgg gattctctag ttagtttttct 120
ttgcctaact gagatatcta tttcatacta ctcttcattc cccaaatata tcattcccct 180
ctctacctcc cctcccagct gcccccacaa cctcgag 217

<210> 164
<211> 165
<212> DNA
<213> Homo sapiens

<400> 164
gaattcgcgg ccgcgtcgac gcacaatagc agtttctaag caatgaatga gaggacacgt 60
atgttggtga ctttgttgtt tctcttcatc cctccaataa ataaaaccga gagttttgtg 120
gacagggatt tattagagtt tcatcattta gttgacaggc tcgag 165

<210> 165
<211> 227
<212> DNA
<213> Homo sapiens

<400> 165
gaattcgcgg ccgcgtcgac tcgtgttaat aacttttttgc tttgttggat tgtttcttta 60
ggatacattt ccagacatat acttagaaca tcaaaaacgt atggacatct ttttgatttc 120
tcatgtgtta tattatgtcg catgtgttat gttatatgta tatatatata tgtataacac 180
atatatatat gtcatgtgtt atattatgtg ggggggaaaa actcgag 227

<210> 166
<211> 211
<212> DNA
<213> Homo sapiens

<400> 166
gaattcggcc aaagaggcct agtttatgaa acttaccaga aaataaaagg accaatctaa 60
aataaagaat ctctattgta tttttctact gacaatgcaa atgcttatct taaaacatct 120
aattttttcc ccctttttcac aggcaagcac aactgtaaca ctttccagaat ctcagttcct 180
tgccagttgt cattctgaag catccctcga g 211

<210> 167
<211> 218
<212> DNA
<213> Homo sapiens

<400> 167
gaattcggcc aaagaggcct agaattaaaa cccataatct atatcttagc taagatagga 60
aaaatttact aaaatatttt tttctggttg aatttcagat ttctcctata actctgcaca 120
ccagaaaaaa atctatagta caaatacaca tgaaattcca tcaactgttt catttttttt 180
taatttttct taatcttgtt cagggcatac atctcgag 218

<210> 168
<211> 238
<212> DNA
<213> Homo sapiens

<400> 168
gaattcggcc aaagaggcct aaagccaggt aaaaatttta aaaaagatga aatccttttct 60
ggcttctgcc agaggtcctg cattcttcat atctctgttc ctcatcagtc actgcaaagc 120
tgatcagaca gattggcatg gtgttcagca ttttgagttc cagactctgg cgatgggaga 180
taggtcattt ggaatttttc cctcatcccc tcctcaaaac caaatcagaa atctcgag 238

<210> 169
<211> 265
<212> DNA
<213> Homo sapiens

<220>
<221> unsure
<222> (31)

<400> 169
gaattcggcc aaagaggcct aggttgatta natattttgg ctattgtgaa tagtgctgca 60
gtaaacgtga gggtgcccat atctctttga taaactgatt tcctttcctt tggatagata 120
cccagtagtg ggattgctgg atcatatggt agttctattt atagtttttc tttttttttt 180
gagacggagt cttgctctgt caacccaggct ggagtgcagt ggcatgatct cagctcactg 240
caacctccgc ctcccggggc tcgag 265

<210> 170
<211> 230
<212> DNA
<213> Homo sapiens

<400> 170
gaattcggcc aaagaggcct aggatattcc agcaaagtct ctaactgcag cctgtagaca 60
atttgctatt aaagattcag tgcacaaaat atagctaaca gcttttaaat ttttactttt 120
aaccagtctg gggatttgct tgcctggtga gtctcatatg ccatattatg aatatgaaaa 180
taatgaagtt aatttcctgt tgcctttctg tgtcagccac aaacctcgag 230

<210> 171
<211> 293
<212> DNA
<213> Homo sapiens

<400> 171
gaattcggcc aaagaggcct aggaatggct tgatggtgtc aggctatgct gtgactgggg 60
ctgtcctggg ccaagacagg ctgatcaact atgccaccaa tggtgccaag ttcctgaagc 120
ggcacatgtt tgatgtggcc agtggccgcc tgatgcggac ctgctacacc ggccctgggg 180
ggactgtgga gcacagcaac ccaccctgct ggggcttcct ggaggactac gccttcgtgg 240
tgcggggcct gctggacctg tatgaggcct cacaggagag tgcgtggctc gag 293
<210> 172
<211> 139
<212> DNA
<213> Homo sapiens

<400> 172
gaattcggcc aaagaggcct agggattttt tactagtgat ttaatgttac tacttgttat 60
tggtctgttc aggctttctc tcttcctgat tcaagctggg caggttgtat gtttccagga 120
atttaccatt tccctcgag 139

<210> 173
<211> 149
<212> DNA
<213> Homo sapiens

<400> 173
gaattcggcc aaagaggcct agtgagagtg acatcatgca ggaattactc gtattgaaca 60
cactttttct agatattctt ccaatccccg acgtcgggca tctaattgtt gttctgataa 120
tgaaaatggc cactcccccg ggactcgag 149

<210> 174
<211> 209
<212> DNA
<213> Homo sapiens

<400> 174
gaattcggcc aaagaggcct actcgaagtt cctcaaatac accaaagact ttcctggcct 60
aaataatttt tatgtatcta tttctgcatt ctcagctttt ctttttcctt ttatctaccc 120
aaccaaatct ttcaaggctt agtgaaaatg atttccttcc tgaggtcagt ccttgcccaa 180
aaagatccct cacatcctct aaactcgag 209

<210> 175
<211> 223
<212> DNA
<213> Homo sapiens

<400> 175
gaattcggcc aaagaggcct aatcatatta taactgatta gacaaaatgt ggcattattg 60
tttttatttc ttttgtgttt tacaaggtct cactctgttg cccaggctgg agtgcagttg 120
tatgatctcg gctcactgca gcctggacct cctaggctca agcaatcctc ccacctcggc 180
cccccacata gctgggacta caggtgcagg ctatcgactc gag 223

<210> 176

<211> 151
<212> DNA
<213> Homo sapiens

<400> 176
gaattcggcc aaagaggcct agtttcttga atgtaacatg acatttctca tttccatacc 60
ttcatttatg ttgtttattc ttggaatgct cttccttcat tttgatgctt cacacgctaa 120
tacacatcct tcaagaccca attcactcga g 151

<210> 177
<211> 327
<212> DNA
<213> Homo sapiens

<400> 177
gaattcggcc aaagaggcct aaacataatt agttgtttat atacttcctc tttaatccca 60
gagttcgatt tacaaaatat ttgattgctg tttttgtata ttatctcagt gctctaaaat 120
taccctagca aacgtgcagg aatgggtgta ggccccttaa ataaaaatgg aattagttat 180
gttgggtttt tttttttgc tgtttcactg ttacaattcc ccactgtcaa aggctcattc 240
cacaattttg tgggattagg gacaatggga tgtcatctct cagctggcta cttcttgccg 300
aacagggtca acgcggggca actcgag 327

<210> 178
<211> 500
<212> DNA
<213> Homo sapiens

<400> 178
gaattcggcc aaagaggcct agaggggcgc tgcgaggtat actgctctcc tctctgggat 60
ctgtgagtaa tacactacct ctgctatttc atgcacccct gctatttcac gttgcctcct 120
ctgtgtctca cctgcccagc acacctgaat ctacagtatt tcctggtcag ggcattccta 180
gagagtggct atcttggtag gaataaacca gaaacaggtc agacaagagc cccaagagtg 240
tctgtcaata taatcaagtc cttatgagag aggacatctg gtcacaggtg gacacttagg 300
cattaggcct tccaccagaa agaagtatcc caagaaaggc acactgcaga cagccacgac 360
cacctcccct gcatcagagc agggctagag tttatagcca ctttctagag agagctcaag 420
aactaattag aaagaaaaaa aaatacaaca cacttgtcca tgttaaaact gggatttgga 480
cccatgccat ctggctcgag 500

<210> 179
<211> 226
<212> DNA
<213> Homo sapiens

<400> 179
gaattcggcc aaagaggcct agttgagggg aggttggttt catggtttta cttttggttt 60
tttgaggact atgtttgttt ttatttttat tttttatttt tttattttg agacagaatt 120
ttgctattgt tgcccaggct ggagtgcagt ggcacgatct cagctcactg caatctccgc 180
ctcccaggtt caaactattc tcctgcctca gcctcccaag ctcgag 226

<210> 180
<211> 272
<212> DNA
<213> Homo sapiens

<400> 180
gaattcggcc aaagaggcct aatgtggctc ttctcctttt ttcacctatc tttgatttga 60
tgctcagaat atgttccttc tggtgccatg ttgacagcta agtttcccaa ggatatgcca 120
gctttcttta ggagttttct tcttctcatt cctaccatga tgtgagaatt gactgagctg 180
gtttcctcct atttgttgta cacattacta gtaaccatta cttataatta ttttagatga 240
tgctagcatc atttttactg ataaggctcg ag 272

<210> 181
<211> 210
<212> DNA
<213> Homo sapiens

<400> 181
gaattcggcc aaagaggcct aagaatgtgc atacatgttt tcatgagtgt cctttgggtg 60
ctgtttcttt taaatcctct gtgcacaggg ctctggcctt tagtaaactg tttttctgtc 120
ttacgtcatg ctgactgggt gctaggggct gattacaaag gggaagagtt gaacagacat 180
caggggccga tgaaactaaa tggactcgag 210

<210> 182
<211> 353
<212> DNA
<213> Homo sapiens

<400> 182
gaattcggcc aaagaggcct acgttctgca agtactagtt aatacaataa aactagagag 60
agaaagaggt aattcaaagg caggaggtaa aatgatcact acttgcacaa tgagtgtata 120
cctgaagaaa cccaagggaa tccactgaaa aactactatc aacatgaaga gagtttcaga 180
aaagatgaca gctgggtaca aaattaacac agagaaccca ataggtatca catataaacc 240
aacaactagt gagaagatac aatggaagaa atggccttat tttcaaaagg aacaaaaagt 300
taaaatatta taagtcaatt tcacaggaaa tgtctaaaac tcccagactc gag 353

<210> 183
<211> 198
<212> DNA
<213> Homo sapiens

<400> 183
gaattcggcc aaagaggcct aaagacatca aggcattcaa tgcataccgt tttggttttt 60
attttctcct gtcctttgct ttctggattt tcatctcatg taaagcatgt ggggttttta 120
tttttatatt tttgtgtgtg tgtgcagtgt ctgccccaag caagtctctt gggaggagga 180
ggcggcagca cactcgag 198

<210> 184
<211> 216
<212> DNA
<213> Homo sapiens

<400> 184
gaattcggcc aaagaggcct attttaattc tatttttcat ttgagctgac ttgtagccac 60
ttcagactat caatggaatc ttatgttgag cctttctctg gctttccttc ctccactatc 120
tctccaactt tagagatcat cccctctccc tccagtgcgt tctatctccc ccacacccac 180
cctagatact ccctttttcac ccacctcctc ctcgag 216

<210> 185
<211> 208
<212> DNA
<213> Homo sapiens

<400> 185
gaattcggcc aaagaggcct aaaggctgaa tatgaggaaa aattcctggt acaaggtcat 60
actaagcatt ttagttccac ctgccatatt gctgttagag tataaaacta aggctgaaat 120
gtcccatatc ccacaatctc aagatgctca tcagatcaca atggatgaca gcgaaaacaa 180
ctttcagaac ataacagaag agctcgag 208

<210> 186
<211> 184
<212> DNA

<213> Homo sapiens

<400> 186
gaattcggcc aaagaggcct aatttctcat cacccaaggc tgcaaatctt ttcaaatgtt 60
atatttcata ttgtggttac tgtctccaaa tatcttctct ttccttctcc ttcaattgcc 120
ttgcagctgg caagtctctg gagtccctgt cccctgccat tgcccactga acagacatct 180
cgag 184

<210> 187
<211> 239
<212> DNA
<213> Homo sapiens

<400> 187
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aaaaatacat gctgtttaga atatctgata ggtgtttcca gctactatta gaggtgatag 120
tgcttttgtg ggggaaaaaa ttggtcatgg tgaatggaga tcgaggaagc tcgggacaag 180
ggagggtgg gctgcctgat tttgtccagt tttccaaata tccacgcaat gaactcgag 239

<210> 188
<211> 216
<212> DNA
<213> Homo sapiens

<220>
<221> unsure
<222> (151)

<400> 188
gaattcggcc aaagaggcct agtgtgtgtg tgtgtgtgtg tgtctaattc aaattataca 60
caaggagttt gtgcaggctt tctttagagg cagaagccag ttaggcaggt caagaataat 120
ataaaatcac aaatgaagag aataatgtgt ntatttttca tttgtcattt aggactgtct 180
gggggagact gtcctctctt gggcggaaga ctcgag 216

<210> 189
<211> 303
<212> DNA
<213> Homo sapiens

<400> 189
gaattcggcc aaagaggcct acaatcttta gcttccatag tgtcacacac tattaaattt 60
ttctcttcct cattagctgc acctactcat tctctttgtt ggttcctcct catcttcttg 120
acaacttttg cagctgcctc catggcattt ccacttggtt atctattaat aatatttatc 180
ctaatgtgtt cagaagcaaa tttctgttcc attctacctc ccaattctgc tccaccttca 240
gtcttaccca gttcgattaa agacaactct attcttccac ttgcccagac caaaaacctc 300
gag 303

<210> 190
<211> 209
<212> DNA
<213> Homo sapiens

<400> 190
gaattcggcc aaagaggcct atgagaatcc acgcgagacg gagccctcct cgccggccgg 60
cctggacact tgggatctgg ttcctgttct ggggatgtat cgtcagctct gtatggagtt 120
cttctaatgt agcttcctcc tcctccacct cttcctcgcc ggggtctcac tctcagcacg 180
agcaccattt ccatggcaac acactcgag 209

<210> 191
<211> 195

<212> DNA
<213> Homo sapiens

<400> 191
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gctttttgtt tgcacaaact cggtcccctt ctgtttctct acgatgtttt gatgcagcat 120
gaggcagtca tgagaaccca ccagatacag ctgcctgatc ctgaatttcc cagccaacag 180
aaccaaatgc tcgag 195

<210> 192
<211> 215
<212> DNA
<213> Homo sapiens

<400> 192
gaattcggcc aaagaggcct agaaagccct gaccctagat tggctgaatc tgaatctgca 60
ttttaacaag atctctagga ataaatatgc acaataaagt tttaggtgca tggctctgtg 120
ccatgctgcc tgtttctgac acaaatgaaa gaaaatcagc tattgaagga agcaggtctc 180
tagatctgac agtccatgtg tcttcttccc tcgag 215

<210> 193
<211> 275
<212> DNA
<213> Homo sapiens

<400> 193
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gcctcccaag tagctgggac tacatgccct tgcctctgct ttgttttcca ttatttctc 120
acatgtcagg cttcattata tgtttcacag tctttattat tatttacctt cctcagctag 180
aatgtgagtc cacaaggata ggtctgaact cttttactca cagcatttct gacccccaaa 240
tatgtgtctt ttgtcctcat accaaccaac tcgag 275

<210> 194
<211> 282
<212> DNA
<213> Homo sapiens

<400> 194
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ctttttaaaa aataaatcgc tgacaagtgt gaatcccgtg aagactttat tttgtgttgt 120
gtgtatcctg tacagcaagg ttggtccttc gtaacaacgg atgaaatggt tccctttttt 180
aaagcgccct ctctccctcc accctcagcg cccctgtcct tggcatgttt tgtatcagcg 240
atcattctga actgtacata tttatgtagc gagaggctcg ag 282

<210> 195
<211> 132
<212> DNA
<213> Homo sapiens

<400> 195
gaattcggcc aaagaggcct agcttgccca ttttgcttgc caatgttcca tctttcgggt 60
tctgatttaa tgcttgctca tatgctacta tggcttcttc aggctctaga atattcatgt 120
atgcatctcg ag 132

<210> 196
<211> 224
<212> DNA
<213> Homo sapiens

<400> 196

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gacatgacga agggccttgt tttaggaatc tattccaaag aaaaagaaga tgatgtgcca 120
cagttcacaa gtgcaggaga gaattttgat aaattgttag ctggaaagct gagagagact 180
ttgaacatat ctggaccacc tctgaaggca gggtaggact cgag 224

<210> 197
<211> 169
<212> DNA
<213> Homo sapiens

<400> 197
gaattcggcc aagaggccta agtgaaacta agtaactact gtcagtcaca tttactcctt 60
agcactttgg agtaaactgt ggtttgattt tattttgaca gggttaacaa acttggacat 120
acacacacat acataaacac tcatgcaaat caacttaaaa atactcgag 169

<210> 198
<211> 209
<212> DNA
<213> Homo sapiens

<400> 198
gaattcggcc aaagaggcct actcaaaaga aggaggaaaa acaaggtcct gaaagtgctt 60
atatttcatt agggaggtgg agaaaaaagg gacaaaaaag tgactgagaa gtaataatta 120
acaatcagaa agacactaga gttcatcctg ggagccacgg agggacaagt ttcaaacttg 180
agaagatgaa gactgcagca gttctcgag 209

<210> 199
<211> 306
<212> DNA
<213> Homo sapiens

<400> 199
gaattcggcc aaagaggcct accgtctcaa aaaataaata aataaatagt ctattgccta 60
agaataatat cctattcctc atttctcctc tttacacatt acacacccca ctaactgtgt 120
gttctagatt cacgcatctt tgtacctatg catatgctgt tctctctgtc tgaaatgtct 180
ttcctcttcc ccctcatcta tcagattcca aaagtccttc tgactgggct cagatgtgat 240
tcttcccgga gaccttctcc caatcttccc caagttgcag tcatctcttc acactgggaa 300
ctcgag 306

<210> 200
<211> 176
<212> DNA
<213> Homo sapiens

<400> 200
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atgcagtctg ctacatgatg gtatccttaa tttctttcat tggatttttg cttgaagatc 120
gagtagcctg caatgcatcc atccctgcac aatataaggc ttccacagat ctcgag 176

<210> 201
<211> 198
<212> DNA
<213> Homo sapiens

<400> 201
gaattcggca aagaggccta atcttttctt agcactgctc tctcatacat atcagggtgc 60
aaatattctt ctgtgccata cagagaaaca aactgctcat catcttctaa ttctctagct 120
gcaccaaaat ctgtgagttt gtacacagat tgtccatctt cccctataac acgcatgata 180
tttcctggct tgctcgag 198

<210> 202
<211> 471
<212> DNA
<213> Homo sapiens

<400> 202
gaattcggcc aaagaggcct agtttagata tatatctagt tcaagccaaa ttagtctggg 60
attagtaagg tttttgttaa cctaactttc gaattactgt ggctttaaat ctaatctttg 120
actttttccc caaaatctta ttgcattcag agtttctcat tttagattag cttgcatagt 180
aataaattat agaagtgaag gttgcactta ataagcctgt gcttattttt ccatttgagg 240
tgcatatatc acataaggtg gtattagtgc tcttttgttt tgaagctagt ggccatgttg 300
tatctgtctc tagtggtttc aagcctagca tctttttgtt ttgttttgtt ttgttttgtt 360
gagacaagtt ctcgctctgt tgcccgggct ggagtgcatt ggcacggtca taactcactg 420
cagcctcaaa ctcctggacc caagatatcc taccacctca gctccctcga g 471

<210> 203
<211> 261
<212> DNA
<213> Homo sapiens

<400> 203
gaattcggcc aaagaggcct atactggctg aaatcctgtc tcaaaaggaa gtgagtcatg 60
aagaccagac catgttttta ttttattttt ttattttatt attattattt tttgagatgg 120
agtcttgctg tgtcacccag gttggagtgc ggtggcccga tctctgctca ctgcaggctc 180
cacctcccgg gttcacgcca ttctcctgcc tcagcctccc aagcagttgg gactgcaggt 240
gcccaccacc acacgctcga g 261

<210> 204
<211> 211
<212> DNA
<213> Homo sapiens

<400> 204
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acatttagaa gtagattaag agaaaatgag aaatgggatt tttctttttc taatctcttt 120
ttttttggag acacactctt gctctgtcac ccaggcagga gtgcagtggc actgtctagg 180
cccactgcaa cctccacctc ccaggctcga g 211

<210> 205
<211> 223
<212> DNA
<213> Homo sapiens

<400> 205
gaattcggcc aaagaggcct atgtattttt catgatgtta ccttccttgg tgtttctttt 60
gcacggattc acacacgttt tttacttaga acttgcattt tcacctgctt ggacaggagc 120
ctgcttggag cacagtcatt ctttgagcac tgtcacccca ttcttcaggg tcccagccat 180
gcttggccat cacctgattc cccgtagccc cggaagtctc gag 223

<210> 206
<211> 231
<212> DNA
<213> Homo sapiens

<400> 206
gaattcggcc aaagaggcct aaccctggcc gccctacaca tgctcttcct gctctatctg 60
catttgcct accacaaagt ggtagagggg atcctggaca cactggaggg ccccaacatc 120
ccgcccatcc agagggtccc cagagacatc cctgccatgc tccctgctgc tcggcttccc 180
accaccgtcc tcaacgccac agccaaagct gttgcggtga ccccgctcga g 231

<210> 207
<211> 227
<212> DNA
<213> Homo sapiens

<400> 207
gaattcggcc aaagaggcct atacagagat actctagccc actcttgcaa caatattacc 60
aaggtgcatt tccagtaatg ccagttaaga gcttctatgg agacgttacc caacatataa 120
cagttgatta tagcatttgg aaaatatgcc tgagggaaaa aataatttat ttatcgtcac 180
tattattatt ttgccttttc taccatctgc tacaggccag actcgag 227

<210> 208
<211> 211
<212> DNA
<213> Homo sapiens

<400> 208
gaattcggcc aaagaggcct agtttgattt ttttgttaat aagggacctt ctcaaagata 60
cttttaaatg aaaagacaaa gggtcagaaa atactggttt tttttttttt ggacagtctc 120
attctgtgac ccagactgga gtgcaatggc gttgatcttg gctcacagtg acctccgctt 180
cctgggtcca agtgatgccc cctatctcga g 211

<210> 209
<211> 152
<212> DNA
<213> Homo sapiens

<400> 209
gaattcgcgg ccggtcgacc acgtacgtta ccataccaca gatttatttt gtaaatacag 60
agaacaatta cactaacatt ctgtttaata taattgttct tctttgcaat atttttgtat 120
tttacattat gcatttaaaa agttatctcg ag 152

<210> 210
<211> 249
<212> DNA
<213> Homo sapiens

<400> 210
gaattcggca aagaggccta gcccaaatca atgtggtttc tttggaacat tttcagcaaa 60
ggaacgcata tgctgcagtg tctttgtggc aagagtctta agaaaaacaa gaacccaact 120
ggtaagcgaa acatgcatca tgttatgttt ttcctcataa taacctgtct gttgctcatc 180
gagctagatc tgcagttctg ctatgcagga aggcagggga aacataccag gaaccaggac 240
aaactcgag 249

<210> 211
<211> 217
<212> DNA
<213> Homo sapiens

<400> 211
gaattcggcc aaagaggcct actcgacaac tgcactgtaa gaatttcttc tgtgtatttt 60
ctaattctgt gacaacaggc atcaacaaaa catgtggcct gttatcacat ggttcctccc 120
tgtgtgcacc ttcatagaga tttttttctt ttctaaaaga atgaggattc ctctgaatgt 180
tacactatgc aacaataatg tccccaatcc actcgag 217

<210> 212
<211> 191
<212> DNA
<213> Homo sapiens

<400> 212
gaattcggcc aaagaggcct agtcgattga attctagacc tgcctgagct tcctgtttta 60
agtacactat tagtaggaga atggtatcca taaagttgaa gacgcagcat tgcacgcttt 120
tcttcatctc ctttaatttc tctcttttca ttttttttcc tgaatatctc ttgaagcacc 180
aaaaactcga g 191

<210> 213
<211> 272
<212> DNA
<213> Homo sapiens

<400> 213
gaattcggcc aaagaggcct aagcaaaaca cagaaagata aataataact taggtcaaac 60
ctttccttct cattgggtcc atttgcctgt tataaattat tagttaagtc caaagtattt 120
tgtataatca attctgtata ataccagaat tcaccttata aattatagtg atttttaaac 180
atttattctg gactccccat aagttttgag atataaaaat acactgaaat tagaacataa 240
ataacatgaa tttagtaaca ctcatgctcg ag 272

<210> 214
<211> 207
<212> DNA
<213> Homo sapiens

<400> 214
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tttggtgtca gtatttcttg tcattcttga tttttttgtg aaagattgga gagcaaaagt 120
ggtatgaaca gttgtcaatt ctgtaccata gtaagcactg tgatgctatt tcattttgtt 180
tttacaagtg aaacaggagg actcgag 207

<210> 215
<211> 231
<212> DNA
<213> Homo sapiens

<400> 215
gaattcggcc aaagaggcct agcagagtca agttatacag tctaataact agaaatttct 60
aggtactttct cgcagagaat gaaagtggga aggagttttc taacactggg gctttctttc 120
ccttgtcttt acaaaagaca aagcctaggc agtcagtcag tagcactaga gtattcctta 180
tgggcattaa gaatttctcc tgtttcctgc ctcaatcccc cttccctcga g 231

<210> 216
<211> 159
<212> DNA
<213> Homo sapiens

<400> 216
gaattcggcc aaagaggcct aattgaattc tagacctgcc tactattttt gtgaagaatg 60
gtattgatta ttgctaatat tctttttttac attcgccatc ttggtgggtt agagaatatt 120
ctgctgccat gctaccatct accctccacc ccactcgag 159

<210> 217
<211> 216
<212> DNA
<213> Homo sapiens

<400> 217
gaattcggcc aaagaggcct acttagttca ttccgatttt tcaagttact atacttatgt 60
aaaaaattac ccccaatttt agtgactttt acagaatcaa aaaatactta tatgcttatg 120
aatctgcagt ttaggcaggg cttggtgggc ctagctcatc tttgcttttt gtggggtcac 180
ctgggctgct tgatagtggg agcggacaac ctcgag 216

<210> 218
<211> 213
<212> DNA
<213> Homo sapiens

<400> 218
gaattcggcc aaagaggcct aatttgttcc aatctggccc tttttttttc ttccttcatt 60
ttctctcccc ctcttgttct ctctttttca aaaatgtttt ataattcctg gaatcaaaac 120
cacttcaggc acacactgtt ttattttact gtattattgg attataccgc ctataaatca 180
ctggatgtta ctcattggcc accgacactc gag 213

<210> 219
<211> 196
<212> DNA
<213> Homo sapiens

<400> 219
gaattcggcc aaagaggcct agattgaaat ggtttgccat ctgcttcgta tgtggcgttt 60
tcttttctat tcttggaact ggattgctgt ggcttccggg cggcataaag ctttttgcag 120
tgttttatac cctcggcaat cttgctgcgt tagccagtac atgcttttta atgggacctg 180
tgaagcaact ctcgag 196
<210> 220
<211> 438
<212> DNA
<213> Homo sapiens

<400> 220
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cctccaggcc ttaatggatt ctgcaggtga cttgctctcc cctgctatct cagcctccag 120
agtagcctgc ttctctcgca ggcgcttctg tttggcttca cggttcctcc gggagatggg 180
agatccatgg ggctccgact gtgtagaaac ggagtgaaac ctggggaggc cccgtgagtg 240
cctcagcccc caaaatggtg gtcgaaaaga agcgagaggc aaatgaggca tcaggagtgt 300
ttggaaaggg gccgagatct gttcaggagg ccccgccgct atcccagggc gccccgcggc 360
ggcagggact gaggaatcca ccaaacccga ccctggaacg tgcctaaacc gtcgattgaa 420
ttctagacct gcctcgag 438

<210> 221
<211> 193
<212> DNA
<213> Homo sapiens

<400> 221
gaattcggcc aaagaggcct aggcaaataa aatgctcctc ctcctaaagg ctgttaacac 60
aaatcaaaga aactcccctt cttttctttc tataatatgt ttttccttat tgttaattcc 120
tgcatgtggt agcaggagtt tagggactgt gggcagcaga agaattaggg cgagggcagg 180
gggtccactc gag 193

<210> 222
<211> 171
<212> DNA
<213> Homo sapiens

<400> 222
gaattcggcc aaagaggcct aatttaacgt cggtagttct gctttattaa aatgcagcag 60
aggtactctt ctgtcccttc cgtttatagt tctctgagag agttctattt tttggttttc 120
ttttgtgttt tcttttgcat tttgtatctt gtatttatcc ctgatctcga g 171

<210> 223
<211> 254
<212> DNA

<213> Homo sapiens

<400> 223
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ttccccaagt aattaaggct ttagagaagt aaaagtcagt tcctcaaaat ctattagatt 120
gggttagaaa atcctatatt ggacaatctc tattagatga ctaatattat taatctattt 180
tagaaaaccc tatcttttac aaactctgaa gtatttttca actacaaaat tccatcatga 240
agattttact cgag 254

<210> 224
<211> 249
<212> DNA
<213> Homo sapiens

<400> 224
gaattcggcc aaagaggcct agaactgcat ctagactaca cggattttac ccaaaaagac 60
agcacttgca cttaggctaa gtgtctttct ccatcgtaac caatttattg aatcacttta 120
agagtgatca ttggggaaat tttcctcctc agccttattt tggccttttg aaacagcaac 180
aaagactgcc tagtcaaata actccttagc tgattttacc ctcaaatgcg ttttcgtact 240
ttcctcgag 249

<210> 225
<211> 269
<212> DNA
<213> Homo sapiens

<400> 225
gaattcggcc aaagaggcct agcaggataa agcttaaaca catctcttgt ccattcaaga 60
ccctggggca tctgtttttg ccagcagctc ctcacaggtt ccattccatc aaagctggtt 120
cagttattta ccctgtccca gaggccatgt tttgcctgtt gtcacttggt atgcttctct 180
tatgcaataa tattttgtat gaaggtttct cccaggcact gtgcttggaa tcttacacca 240
tatttaatct tcacagcacc agactcgag 269

<210> 226
<211> 211
<212> DNA
<213> Homo sapiens

<400> 226
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cattactgta taaatttttc ccagaggaga aaatttaatt tttccttata tttccaggat 120
tatgcgttgt tcatatatat atatattttt ttctacattt attttctttt ctttttttaa 180
cttttgtttt aggtttggtg gtactctcga g 211

<210> 227
<211> 215
<212> DNA
<213> Homo sapiens

<400> 227
gaattcggcc aaagaggcct acatgttttt tcatgctttt cttttcctct acctgcaaca 60
tcctccacat tcttcttctc cagggtcact cctatgcatt cattgcttct actgccatct 120
ccttcaagac aacttgtccc tggaaaccaa atcacccttc tctctgctcc cacaggaccc 180
tgtgcacatt tatatccgag tactcaggtt tcgag 215

<210> 228
<211> 237
<212> DNA
<213> Homo sapiens

<400> 228
gaattcggcc aaagaggcct agccagtgag aaacgagctt accaaaggca gtgtacgaag 60
aaggttcctg ggagactgtc agaaatgagt ttttcactga acttcaccct gccggcgaac 120
acaagcaacc aaccattttg ctttgcctgg tgttgtctgt ttttagcact gaaagtcctg 180
ggcagctctc tggacaatgc ggatgacgtc ctctcctgtc acaggtggga tctcgag 237

<210> 229
<211> 101
<212> DNA
<213> Homo sapiens

<400> 229
gaattcggcc aaagaggcct agtttgtgtg cagggataat gttatctgtc ttaggaggca 60
atggggtcaa tctggttact tggttgaccc cactgctcga g 101

<210> 230
<211> 235
<212> DNA
<213> Homo sapiens

<400> 230
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attatattga gttaagggaa gaggaatctt ttaaaattct gagtggtgag agaaatatat 120
atgaattttt ttttttacac aaatgagttt tcattggtca tgtttctttt tatttctttt 180
gtgtaggtgt aattgttatc tattgctgca gaacaaatta ccacataaac tcgag 235

<210> 231
<211> 344
<212> DNA
<213> Homo sapiens

<400> 231
gaattcggcc aaagaggcct aatatgttag tcaggtttgc actgagtctt cttccaatcc 60
ttcagcctgg acaacagagt gaggtcccct tgtggccaga ggccagccct ccttgcctgc 120
cttcctttga cctctctttt ccatccatga agccctcagg cccttgccat tttttcacca 180
cagaaaactc atggcttctc cagaagcctg agtatctctc tttcccagca caaatggcag 240
catctctatc ctgccccatc tgggccactt cagcttcctg tagacaccca agacagatgg 300
acagtgttgg agggaatcag gctttgagga tccagagtct cgag 344

<210> 232
<211> 323
<212> DNA
<213> Homo sapiens

<400> 232
gaattcggcc aaagaggcct atctttaaca cattttgga tttgatttgt taatattttt 60
agtgttgagg atttttacat ctgcttatga gaaatacttt attggtctat aatttcttcc 120
agtatctttg taatttttttt ttaagagatg gggtcttgct ttgttgccca ggctggagta 180
caatgtgcaa tcataggtct ctgcagcctt gtattcctgg actcaagcaa tcctcctgcc 240
tcagcctctt gggtagctgg gactacaggt atataccacc atgcccagct tctttgtgtg 300
gttttagtga cagagatctc gag 323

<210> 233
<211> 478
<212> DNA
<213> Homo sapiens

<400> 233
gaattcggcc aaagaggcct accctgatcc ctttctcaga acagcacagt gtccccacca 60
agtgctaata aatgttgttg gataacagaa caatttagtt taaatctcct ctcacagagc 120

agaatcgcct ggagggattt tgccttgaaa attaaattct gatatcaatt tctaaaatta 180
tttacaatat taaagttgaa atgaatccat cacacagttt ccttccaatg ttagtctttc 240
aagtgaacct actttcctat tagcagtcac ctaaaaacaa ataagcaaac aaacaggtaa 300
ctcagtcttc cctctgactc agtgtgagga aagggacagg cagcatctgg tgacagctta 360
cttcagtggg tctccatggt tcttcaccaa aaccacttgt gtttcctctt caagcaccac 420
agtatcctat gacactaggc cagtgggctc tcaaactttt ggaattcagg aactcgag 478

<210> 234
<211> 119
<212> DNA
<213> Homo sapiens

<400> 234
gaattcggcc aaagaggcct atctagacct gggtaagtta cagaggcaaa taaaaccagc 60
aattataaca aaatatatga agtatgatgg tagagatata tattatacgg gctctcgag 119

<210> 235
<211> 253
<212> DNA
<213> Homo sapiens

<400> 235
gaattcgcca aagaggccta gaggaatctt gtcttttgta catgtttgtt tgtgacatat 60
tagatctgtt tgattcctct gttttagttt tgaaatgtgc atgttatccc agctttccat 120
tatttggttg tcctttaagt gtgcctctga tatgttgcac ttatggagag gtcacacctt 180
gccagctgcg cttaccttac ctatacttgc caacctaggg gtctgctact gtcaaacaca 240
gcatcaactc gag 253

<210> 236
<211> 244
<212> DNA
<213> Homo sapiens

<400> 236
gaattcggcc aaagaggcct aaaggaatgc tttcacaata gtgtatcagt tcttttgttt 60
tgttaaagtt ggaatttatt ctgttgccag catttaagta gtcatggcaa gtcctgtttt 120
taagaccttt tggagactgg agctttctgt tccattaagt ctttttgttta tactacaaat 180
tgtcacctca cttagttcag atgaaatctg ttactctaca aggaaggtgt tcatcaatct 240
cgag 244

<210> 237
<211> 171
<212> DNA
<213> Homo sapiens

<400> 237
gaattcggcc aaagaggcct actttgggat tggatgatac agcttttgct tctgtgtagt 60
atacctgtac atacttgttt caggcagcct ttctttaatg ttttcagttg gtttgtattc 120
tgtagctcag tagctgctaa taaagttaaa gatcctgtgt ccagtctcga g 171

<210> 238
<211> 200
<212> DNA
<213> Homo sapiens

<400> 238
gaattcggcc aaagaggcct ataccagtgc attaatttgg gcaaggaaag tgtcataatt 60
tgatactgta tctgttttcc ttcaaagtat agagcttttg gggaaggaaa gtattgaact 120
gggggttggt ctggcctact gggctgacat taactacaat tatgggaaat gcaaaagttg 180
tttggatatg gctcctcgag 200

<210> 239
<211> 238
<212> DNA
<213> Homo sapiens

<400> 239
gaattcggcc aaagaggcct agttgggaca atagtaaacg gacatggcac actggtgggc 60
atgtcttatg aaaagctgct tttgcccctt ccctgtttta tctagtcctc attttggtct 120
ggtgtctgag cccagctcca gagtccagcc ccgcctccca cctcgaaggg agggacaagt 180
tcctgctggc ctctttgata agggcactaa tcctattcat gaggatggag ccctcgag 238

<210> 240
<211> 250
<212> DNA
<213> Homo sapiens

<400> 240
gaattcggcc aaagaggcct ataggcctct ttggccgaat tcggccaaag aggcctagtc 60
agattatgat aagtgctgtt gattaaaata aagcagggaa agagaatagg aaattctagg 120
ctaggttgag ggttgtaat ttaaaataac atagtcagag aagtcatgaa ggaaaaatac 180
ctgagacagg ttgttttgca cagatttatg gaaaaagtgt cccaggcaga aggaatgcaa 240
ggctctcgag 250

<210> 241
<211> 223
<212> DNA
<213> Homo sapiens

<400> 241
gaattcggcc aaagaggcct aataactgtc aagtggactg gatacactaa ccagtatatt 60
ccaccttagg caatctctgt gtaaagtgag tttactagat tatttagtga ctgtactgta 120
gctgaaatag aacgcaatgt tgccaaatag aaaaatactt ttactgggac tgaagataat 180
tttttttttg aggcggagtc tcgctctgtc gccaaacctc gag 223

<210> 242
<211> 240
<212> DNA
<213> Homo sapiens

<400> 242
gaattcggcc aaagaggcct ataaagttgt attttcactg aaatgattgt tttgctggtt 60
atgcttggtg atattttagc gggcttattt ttgaaaggca tctgttactt cagtggcata 120
aagtgccctc acactgctgt gcagccatca ccaccattca tctccagaat ttgttctcag 180
tcccaaactg aaactatacc attcaaacaa cagcgctccc catttcccca tcccctcgag 240

<210> 243
<211> 268
<212> DNA
<213> Homo sapiens

<400> 243
gaattcggcc aaagaggcct agtctgggac tttcaaatct tcagaagagc caaatccagg 60
ggaagtagca ggcttgcaat cttcaggtaa agaagcagct ttgaatctga gcttcatatc 120
gaaagaagag atgaaaaata ccagttggat tagaaagaac tggcttcttg tagctgggat 180
atctttcata ggtgtccatc ttggaacata ctttttgcag aggtctgcaa agcagtctgt 240
aaaatttcag tctcaaagca aactcgag 268

<210> 244
<211> 190
<212> DNA

<213> Homo sapiens

<400> 244
gaattcggcc aaagaggcct accaaactat aactgtcctg cctttcttta ctggtaatat 60
gatttccaat gtcgtacttt ttcatgattc ctatcctaaa agtgtgcata agttttattt 120
gtttttacc atttgttttt tgttttgttt tgttttttta cctagagaag tgaaaggggc 180
acccctcgag 190

<210> 245
<211> 286
<212> DNA
<213> Homo sapiens

<400> 245
gaattcggcc aaagaggcct actagatttt tctttcaaat aaaattttta ttcaaaattt 60
ttagatacag aacaatatta tattctaatt gggcttgctt taaatttgta aataaacata 120
aagggttgac aactttgtga tattggaact ctgcaactaa gtacataata tgtatttcca 180
tttgtccaga tctacttttg tgtcttttgg aagtgtttta tggtttactt catgtatgat 240
cctcatgtat atttattatg tttctgtttt aatacgttca ctcgag 286

<210> 246
<211> 222
<212> DNA
<213> Homo sapiens

<400> 246
gaattcggcc aaagaggcct attagaaacc actttcctgg tgaagctgaa acattatata 60
attcccttga gccatcttat cagaagagtc ttcaaactta cttaaagagt tctggcagtg 120
tagcatctct tccacaatca gacaggtcct catccagctc acaggaaagt ctcaagtaag 180
gtcatataaa taatgattac tagtctcttc ctcatcctcg ag 222

<210> 247
<211> 254
<212> DNA
<213> Homo sapiens

<400> 247
gaattcggcc aaagaggcct actttagtct gaaccgggat cttacaggag aattagagta 60
tgctacaaaa atttctcgtt tttcaaatgt ctatcatctc tcaattcata tttcaaaaaa 120
acttcggagc agatacgaca aaggtctttt atattggcct gagaggagag tggactgagc 180
ttcgccgaca cgaggtgacc atctgcaatt acgaagcatc tgccaaccca gcagaccata 240
gggtcctact cgag 254

<210> 248
<211> 264
<212> DNA
<213> Homo sapiens

<400> 248
gaattcggcc aaagaggcct aatttaagga atggtgacta ctgaggagaa ttgcagtctt 60
gaatacttag catattcttc attcattaaa cttttattaa gtgcctgtgc tgtgctagtc 120
actgccaggc agctgcctga tacatggttc ctcctgcctg ggagctccca gtctgagaca 180
gaaaggtcaa cagttctaat ggcaggagtt aagtgccatg agagcatatg ggaggggcag 240
ccttacagcc aggataagct cgag 264

<210> 249
<211> 263
<212> DNA
<213> Homo sapiens

<400> 249
gaattcggcc aaagaggcct acgattgaat tctagacctt cctctctcat cttttgctct 60
cctcttaggt ttctccctta ttttccatag caagagtgtg cagagttttg attggtgaga 120
tttaccattt gatatactca cataagttca ggtttcagaa tatctataaa tttatgatta 180
accaaggttt gttatatata attcacttgg catattgtga ctgtttattc tatccctaca 240
ctggggtagc accccagctc gag 263

<210> 250
<211> 113
<212> DNA
<213> Homo sapiens

<400> 250
gaattcggcc aaagaggcct aggttggtga caatggtatt gtggttatta ggacaattat 60
ttatttgcc ttggtgtcag aggcgtgtga accagagcaa ctctcatctc gag 113

<210> 251
<211> 244
<212> DNA
<213> Homo sapiens

<400> 251
gaattcggcc aaagaggcct agtgtagctt ggttttattt atgtccacaa atatttcaaa 60
aaaattacaa aatactcaaa tggagagaac acagaagtca cgatttctgg gtgtctactg 120
tttacactgt gttatctcat ggcaaactac tcatatatac atttagcttc aagatatata 180
gaaacgtagc aaatccgagt gtgcacgctg cctctgccgc agtggagtga agctcaacct 240
cgag 244

<210> 252
<211> 291
<212> DNA
<213> Homo sapiens

<400> 252
gaattcggcc aaagaggcct aaatttatta aggggtagat cacttttaga aaaattgctg 60
gaagtaattt ttcatgatca tgttatctac attctaaaaa ttaggagaga gactgtgtac 120
aaagagtgtt tattttagag ctttcctcgt atttcaaatt gaataacagg cattctcatc 180
ataaagtttt taaaagaaag gcaaagcaga ctttctgtag gaaatcattg acgttaaaat 240
agttataatt gtgaacagat acaacattta ttcatgaagg taattctcga g 291

<210> 253
<211> 195
<212> DNA
<213> Homo sapiens

<400> 253
gaattcggcc aaagaggcct agttattttg ttctgttctg tcatgtgcca caaaatatgt 60
acttttttca cttttttccc tttgtatatc agttacgggt tacaactggt tcattctgaa 120
aacaacaaca acaaaagtcc attcatattt tttaacaatt gtataagtgc ccaagtaatt 180
cactacagcc tcgag 195

<210> 254
<211> 284
<212> DNA
<213> Homo sapiens

<400> 254
gaattcgcgg ccgcgtcgac ttttgatgc aacacagttc tgtgatggga agctatccca 60
gtctcccatc cttgcaaaac tgctgcttag tactcaggtg ttctctaggt tgttctggaa 120
catttacaaa cttctttggg tgtgaggatg tgctgccaca aggccaaaaa ttcacattctc 180

tctctctctc ctctcctctc taccattctc ctcagtgcca ggtggggaca gattccaccc 240
actgggcctg ggaggaagaa aagcaccttg gcccccgtct cgag 284

<210> 255
<211> 219
<212> DNA
<213> Homo sapiens

<400> 255
gaattcggcc aaagaggcct acttgggagg ttgtgtgttt ccaggaattt atccatttcc 60
tctagatttt ctagttgtgt gcagagaggt gttcatagta ggcattgatt gatgatctgt 120
atttctgtag gatcggttgt aatgttacct ttgtcatttc tgattgtgct gatttggatc 180
ttctcccttt tttttattaa tttcgctagt ggactcgag 219

<210> 256
<211> 180
<212> DNA
<213> Homo sapiens

<400> 256
gaattcggcc aaagaggcct agcatactgg tacatgagag cagtagtgtt gtttgctctt 60
attttcaacc agggagctat ctggcacctt ttgtgctcct ggcttttttc aatcatagca 120
ctattgcatc tcctagctat ttcttttgcc cagcagggta atattgagtc ccatctcgag 180

<210> 257
<211> 500
<212> DNA
<213> Homo sapiens

<400> 257
gaattcggcc aaagaggcct aggaagagac tagaagaaca gcacgcccag caattatcac 60
tactcatagc tgagcaggaa agggaacaag aaagactgca aaaggaaata gaagagcagg 120
agaaaatgtt aaaagagaag aaggcaatga cagcggaagc ctctgagttg gacattaaca 180
atgcagtgga attagaatgg agaaaaataa gtgactctag tttgctggaa acaatgctgt 240
ctcaagcgga ctcactccat acttcaaatt caaatagttc tggtttcaca aattctgcca 300
tgcaatatag ctttgtttct gcaaacgaag caccattcta cctctgggga tcatcaacta 360
gtggcttgac caaactctca gtaacaaggc cttttggaag agccaaaact agatggtctc 420
aagtttttag tctggaaata caagcaaaat ttaacaaaat aactgcagtg gcaaaaggat 480
ttcttactcg tagtctcgag 500

<210> 258
<211> 302
<212> DNA
<213> Homo sapiens

<400> 258
gaattcggcc aaagaggcct agtgcaaaat taaagaattc catgataact atgttatttt 60
ccatttgcat gtgcatttgt ctatcgatcc ctaaaatata tcttaaatta gtctgctttt 120
ctccactttt ccccctccat tttattttta tttatttatt tattttgaga caaggtctag 180
cactgtcgcc caggctggag tgcagcaaca caatcacggc tctctgcagc cttgacctrc 240
caggcccaaa tgatcctccc gcctcagcct cacgagtagc tggggcggga ggaccactcg 300
ag 302

<210> 259
<211> 283
<212> DNA
<213> Homo sapiens

<400> 259
gaattcggcc aaagaggcct ataaagatta ttatattaat tcaactttga tctgatatat 60

cacttaaact aaaggggtgt gtgtggtgta tgcttgtttc ctatttctgc tctttaaaga 120
tactttgaat caataaaacc attagtctac aaatcaaatt gtgaacttaa tctctagaaa 180
gagaatataa ctcagccatt tataggaatt taggttcaag tacaggatat atgaaatctt 240
ttcccagtat ttcagaatgt acttaattca cagatcactc gag 283

<210> 260
<211> 279
<212> DNA
<213> Homo sapiens

<400> 260
gaattcggcc aaagaggcct actggcctca agtgattctc ctgcctcggc ttcccaaggt 60
gctggaatta cgggcatgag ccactgcgcc tgaccagaaa agtggtttac ctgataaagt 120
ggcatttgaa ctgagatctg aaagtagaat atacttgaag tagatgaaga gaggaatgac 180
aatattttat agcagaaagg acagcagccc ttggtggcag gaggcatgtt gtattccagg 240
aacgaaagac caatgcagct gtagtggagc accctcgag 279

<210> 261
<211> 208
<212> DNA
<213> Homo sapiens

<400> 261
gaattcggcc aaagaggcct aggtttgcct ctccttacag cacagagtta tcatcattat 60
ccatacaccc atagaattca gaacaatctt ttcctagtac tagaattggt gcatcatgat 120
tatttacatg tccatcttgc aattaataaa aatactaaca atactaacat acgttggtca 180
ggcaggcact gcacaaagcg acctcgag 208

<210> 262
<211> 160
<212> DNA
<213> Homo sapiens

<400> 262
gaattctggg actaaattct gtaacatctt cgtggatcgt tctgctactg tgggaaagac 60
agcatttcgt tacagcagag accagaattg agaaaaccag aataaaaaaa ctgttcccta 120
ggccatgaag gccggccttc atgccctagt tctccctata 160

<210> 263
<211> 226
<212> DNA
<213> Homo sapiens

<400> 263
gaattcggcc aaagaggcct acgttgaagg acaccagctg cggaatttgc ggctttggca 60
gattgaaatc atggcaggtc cagaaagtga tgcgcaatac cagttcactg gtattaaaaa 120
atatttcaac tcttatactc tcacaggtag aatgaactgt gtactggcca catatggaag 180
cattgcattg attgtcttat atttcaagtt aaggtcccca ctcgag 226

<210> 264
<211> 201
<212> DNA
<213> Homo sapiens

<400> 264
gaattcggcc aaagaggcct aatgccatcc cctctgcctg gaatgccctt ctgcatgaat 60
gcctgtgaaa tgttgttgct cctttgtatg gcctggcttc cgtggttggc aggaatctct 120
tctttcgtgg tattcctgtc atctttgttc atcacagtca gctttgtatt cctagcttgt 180
aagctacggg agaaactcga g 201

<210> 265
<211> 229
<212> DNA
<213> Homo sapiens

<400> 265
gaattcggca aagaggccta gtatgtgtgc tttctttgcc ttcctatttc ctttcaaaga 60
aatctcttgt aaattacaaa actgtgaatt gggttgccaa aaactgttgc ccttcgttag 120
atgcttcaaa cagtgtaaat cctatactgc accctgtcca cctctgctcc ctcctcccctc 180
ccctgagagt gaggacctca tccgaccatg taattaccat tcgctcgag 229

<210> 266
<211> 249
<212> DNA
<213> Homo sapiens

<400> 266
gaattcggcc aaagaggcct actttaacca tccctcccta tgaagtataa aaaaggtact 60
gccagctggg tgcagtggct cacgcctgta atcgcagcat tttgggaggc cgaggtgggt 120
ggatcacctg aggtcaggag ttcgagacca ggatggccgg catggcgaaa ccgcgtctgt 180
actaaaagta caaaattagt tgggcgtggg ggtgcgtgcc tgtggtttca gctacctgga 240
gaactcgag 249

<210> 267
<211> 276
<212> DNA
<213> Homo sapiens

<400> 267
gaattcggcc aaagaggcct agtaggggag tgcgtgaggg cggcgctgat tgataggagc 60
caaggccaat cataacgatt accgtagact ggaaggcgga ccaagaatac gctaatgagt 120
tgctaatttt gacagatgtc cttcggcctt ctccgtgtgt tctccattgt gatccccttt 180
ctctatgtcg ggacactcat tagcaagaac tttgctgctc tacttgagga acatgacatt 240
tttgttccag aggatgatga tgatgatgag ctcgag 276

<210> 268
<211> 312
<212> DNA
<213> Homo sapiens

<400> 268
gaattcggcc aaagaggcct agtcttcaat aaattgatta gtatcaaagg gaagatctta 60
aatcttggag cttttctttt tggaaccttt taattcagtt cctgtcacac cttcctttga 120
tttttaaaaa aatctcccct taactgttct gggatctcac tgctgctccc acacgcctaa 180
cacccatccc ctccacattc acccaaaggg agacactggg ggaggcaagt gtatggaatg 240
tctttgcatt tagatgctgg aactctgaca tcatctcttt tattcataag tttattcaac 300
actatactcg ag 312

<210> 269
<211> 187
<212> DNA
<213> Homo sapiens

<400> 269
gaattcggcc aaagaggcct agagttactg aagcacatca aacacaaaga cagtaattat 60
cagaggtgcc ttcttacatc agcgatttat gcactccaag gccgcagtgt ggctgtgcaa 120
aaacaaatat ctaaagctgt tcacagcaac cctggtgacc ctgctctttg gtctctgttg 180
tctcgag 187

<210> 270

<211> 328
<212> DNA
<213> Homo sapiens

<220>
<221> unsure
<222> (31)

<400> 270
gaattcggcc aaagaggcct actgcacgtt ntgagcatgt acccatttaa ccaaaactta 60
aagtataatt aaaaaaaaaa gaataagaat acaacaataa aaatacatat aagaaacaat 120
ggagtataac agctatttac atagcatttg catcatatta ggtattctaa ctcatctgga 180
gatgattgaa agtatatggg aagatgtgcc aaggttatat gcaaatacta tgccatttta 240
taatagggac ttgagtattt gcagatttgg gcatctctgg gaggtcctgg aaccagtccc 300
ctcggatacc aaggtacggc aactcgag 328

<210> 271
<211> 207
<212> DNA
<213> Homo sapiens

<400> 271
gaattcggcc aaagaggcct agcagtaatc tctatgatgt tctctccttc tctgcttcaa 60
cccagagccc tcccttcccc acctctcaga ctctcccact gtgccatgtg gaagtgtcac 120
aacacaacca catgctctgc tgtatcatct ccttgtcctg aaaagctctg tttgcctccg 180
acttcattga gacccatcaa actcgag 207
<210> 272
<211> 301
<212> DNA
<213> Homo sapiens

<400> 272
gaattcggcc aaagaggcct acaaaatatc attattccgt aatttcctaa agtgcacttg 60
tatgtattga aaagattata gatagaaaca tacataactt ttaaatgttt tctatgcgga 120
atttctcatt atgtccagca tgtggtttac catgtttatc atctcctgtt gtcttaaggt 180
caggggttgc aacaagggag gtcaaaattg gccggggctg agcacaaata cacacccaca 240
gcccttcagt gacctcaggc agcaagatgc ctcccacctc cccccaacac ccaagctcga 300
g 301

<210> 273
<211> 149
<212> DNA
<213> Homo sapiens

<400> 273
gaattcggcc aaagaggcct aggcacgctc tcctcctacc cgaccaacct ccctaccacc 60
tgaaagcctt caacctgcgc atcagcttcc cgccggagta tccgttcaag cctcccatga 120
tcaaattcac aaccaagacc tgcctcgag 149

<210> 274
<211> 231
<212> DNA
<213> Homo sapiens

<400> 274
gaattcggcc aaagaggcct aatctacttt tatctataca gtacacatag aaggctatgt 60
gactatttag aattcaatgt ttgtttacta gttcatcttt agcttacatg ttcattagtt 120
ctgagtagaa ccaagaaaaa ctaattgaag agtatatgct tatgtattat ctcttgctgt 180
gatttaacca atcttgttac atgtattact aataaaagtc cccagctcga g 231

<210> 275
<211> 291
<212> DNA
<213> Homo sapiens

<400> 275
gaattcggcc aaagaggcct aatctattca aactataaga agattacctg ctgacatacc 60
tcaatatttc tatagaaatt gcgattgata ttccaattta agggagtaat catctagaag 120
agacatatac aactggtgag aaaacacatt tggctcggca cacttgttaa catagtacgt 180
ttatatttat gaatgacgaa cagcatgaca cctgaagaca acatcatcaa gagaaagatc 240
caggatgaac taaaaacaaa ccaaaacaaa tcaaccctgg agaaactcga g 291

<210> 276
<211> 271
<212> DNA
<213> Homo sapiens

<400> 276
gaattcggcc aaagaggcct acgtcatcat agctcacggc agccttgaac tccagggttc 60
aagcagtctc tcctgccttg gtcccctgag tagctggcac tacagacata cgccaccaca 120
cctggccttt tttttgagag gagaccttgc tgtgttgccc agcctggtct tgaactcctg 180
gcctcaaatg atcctcccaa agtgctggga ttacaagcat gagccaccgt gcccagccca 240
cttcataaat tttagtcatg caatgctcga g 271

<210> 277
<211> 233
<212> DNA
<213> Homo sapiens

<400> 277
gaattcggcc aaagaggcct aaataaacag acgctgtggc tactggagtt cctcctggct 60
ccttggtgag agtagagagg taatctcgtt tttccaatat aatcttttag gtgtttgcct 120
caggtacctc ttggaagtag acactgagga tttcagtttg tttgacttcc tgccagctga 180
gttcaagagg acaagctaat gaatacctta tgtttcttgc acacatcctc gag 233

<210> 278
<211> 283
<212> DNA
<213> Homo sapiens

<400> 278
gaattcggcc aaagaggcct agtgattatt attaaggata gtaacccttt ggcatattgg 60
ctgcaaattt ttctcctaaa tttttactca ctttctagct attggctttg atgtttctga 120
cataaagaga tttttaattt ttatgtgtta tatctttgga tctttttctt ttttattttt 180
ctcgttatct ttacacttag aaaattctca tgtacgccag gtgcgatggc tcatgcctgt 240
aacccccagca atctgggagg ccgaggatgg tggatcactc gag 283

<210> 279
<211> 222
<212> DNA
<213> Homo sapiens

<400> 279
gaattcggcc aaagaggcct acagagataa tctggcttgg tttaccccat aatctaattt 60
cagaaaagaa agctttattt taacactcat ctgaatcaac attaaagcct ttttctctcaa 120
agcgtttatt gagaaactca aatgaatata ctttttgaat tactgtcatt aaaagtgtac 180
ggcttcctgt gctgcttgtg tcaaatggaa ccggacctcg ag 222

<210> 280
<211> 347

<212> DNA
<213> Homo sapiens

<400> 280
gaattccgcc aaagaggcct agtaaatcca ccaccaaaat tattaatcct cttgagagaa 60
acgtgaaacg ccacaaaaat agagaaaatt caggtctgta tgtcatggat cgtgttggta 120
ttttcagaga acatcccgct tctgaagctg ctgcagctcc ctcctcaggg atcacactgc 180
cgtcacccac tctgcactgg ggcgtttcct actgcgcctc gtgctggcgg acgcagctgg 240
gtgcagaagc tgtggggtcg gagaggcgtt tggagaaggt ctgtggtgca gtgtgtgaaa 300
attcaggtgc tagaagccta ctggtagaaa aacccaaaaa gctcgag 347

<210> 281
<211> 159
<212> DNA
<213> Homo sapiens

<400> 281
gaattcggcc aaagaggcct accaacactg gacaaattga tgacccccag gagcagcaca 60
gagtcatcag cagcaacctg gccctcatcc aggtgcaggc cactgtcgtg ggctcttgg 120
ctgctgtggc tgcgctgctg ttgggcgtgg tgtctcgag 159

<210> 282
<211> 207
<212> DNA
<213> Homo sapiens

<400> 282
gaattcggcc aaagaggcct aatttttggt ggttttagtg atcagtaatc aaatttgtac 60
ttattatgct tgttcaggta atttacttga ctgttctatt tgtttgtcca aaagataaaa 120
tgatgagaga gattcgagag gtctttgatc tgtctccctt ttaagaaatg aagccagctg 180
gtaatgtata ttcaggaccc tctcgag 207

<210> 283
<211> 328
<212> DNA
<213> Homo sapiens

<400> 283
gaattcggcc aaagaggcct agagtacttt tgcatatatt atttaacccc tccaacagtg 60
ctttgaggaa gataactatt tttatcccaa tttgctcgta gggaagattg cttgaagtca 120
cactaaatag tagagccaga attcaaacca aagctatctg atccagttcc taccattctt 180
aaccattctg ctaatttcca gaagtccagc tgataaagtg taaaacaaaa gttgtttgtt 240
gctgttacca agaaaatatc agggaatgct ttctactaat acatcagcag cctctcttct 300
tcttcccctc tctcctccta ctctcgag 328

<210> 284
<211> 323
<212> DNA
<213> Homo sapiens

<400> 284
gaattcggcc aaagaggcct agtggagaag aagaaagcca ggatccccac actaccaacg 60
atcagaagtt tgcccaacag gaagaggaag tcagtaactt tatccaggac agccactctg 120
ataatgtttc tcatgagcag gaagaaggca ttcctggccg aggtgcagaa attggtgccg 180
tagatggcaa tcatgatgta ggcattccta ttaaggaatt tgatgaactt ctccaggcac 240
cagaagcagc atttgagaca ggtcatgagg cacttggcaa acttgttctc tgcagctttc 300
agccgctgat ccaggtactc gag 323

<210> 285
<211> 410

<212> DNA
<213> Homo sapiens

<400> 285
gaattcggcc aaagaggcct accacgatga cagattacgg cgaggagcag cgcaacgagc 60
tggaggccct ggagtccatc taccctgact ccttcacagt attatcagaa aatccaccca 120
gcttcaccat tactgtgacg tctgaggctg gagaaaatga tgaaactgtc cagactaccc 180
tcaagtttac atacagtgaa aaatacccag atgaagctcc cctttatgaa atattctccc 240
aggaaaatct agaagataat gatgtctcag acattttaaa attactagca ttacaggctg 300
aagaaaatct tggtatggtg atgattttta ctctagtgac agctgtgcaa gaaaaattaa 360
atgaaatagt agatcagata aaaactagaa gagaagaaga aagactcgag 410

<210> 286
<211> 387
<212> DNA
<213> Homo sapiens

<400> 286
gaattcggcc aaagaggcct atgcggtttc aggctttatt aacaaacggt gtaaaaaacc 60
agacggatct ggaggaaggg acagggctgc ccgtctcagc tctcaacctt cccagagagg 120
ggccaggcct ggcagccctg tgcgtcgcgc ctcctaagca gtcaaccttg tcccctccaa 180
ggacaggcat ctgacccaat ccaggtccca gggaggcgga gtcgcaaacc ctaactctgg 240
ggtgtattct gctcggcctc ctctcccccct ccccagatag ctctcccagc ctggggcacg 300
gacagcacag actttgcaga catcacccgg ggaggtttct cagtgcagac aggagctgag 360
gtaggggttg gagaggctga cctcgag 387

<210> 287
<211> 369
<212> DNA
<213> Homo sapiens

<400> 287
gaattcggcc aaagaggcct aaaagtatct actagaataa taattccctg gccctattgt 60
cctttatttt aaaaactatt ctggtatatt gctacatttc tttttctcta caaacttaaa 120
attattttgc cactttatcc ttcctaaata aaccatatcc gtttttattt tagtgaagtc 180
acattgaaag tattaactgt ttgcataaga tattcttgta atatccagga tttcttataa 240
gaactgagat tttttaaaaa ttatttctg tctcagtaaa gctttttttct acacagatat 300
ctaaatatgt cacttaaggc aattactagt tgtttatttc atgtaatatt attccgggtt 360
gctctcgag 369

<210> 288
<211> 211
<212> DNA
<213> Homo sapiens

<400> 288
gaattcggcc aaagaggcct agaaaagttt ccctgctcag atttttcact gtgctgcact 60
gaagtttcgt ttgagtgttg ccccatcaca gcaaatgtat gttacttatt tccacacata 120
acagattatg ctttcattaa catcccagct gctgcatttc tcttccagct ttttaacttc 180
cgtaaattca catctttaca tgttactcga g 211

<210> 289
<211> 581
<212> DNA
<213> Homo sapiens

<400> 289
gaattcggcc aaagaggcct aggaatagca aatagaagtg ctagtattta ctagatgcag 60
tgattgctac agttggtttt aagtaaaaca gattgttttt gattattttg aaatcaggca 120
ataatatata atgctgttta cagttcttta aaaaatatgt aacttaaaaa ctcagattgg 180

gaaggggtaa caatctgagt ttttcttttt ctctaagtgt tctgtgaaaa tcttttttta 240
agtcgttcct acttcaggta ttatcacaaa tgtttgattt ctatatgtat gccttaagtg 300
atatatgaca cattttttc cttgactctt ccttgcggaa atttcattac ttgttcatag 360
tttgaatcta agaaatattt gcttttcata gtcagcaggg ccaaaacttt ggtcttgaca 420
actttttgtc aggcattttc acatatcgac agtgtttttg cataaactgt attgcttttg 480
caagtatata gtaaattttt ttcttaatct tcagatgtta tagtatcaaa aattcaaaga 540
cctaagtttt aaaaatgtaa ttgtttgcag taatactcga g 581

<210> 290
<211> 264
<212> DNA
<213> Homo sapiens

<400> 290
gttctaactg ccttcttttt tctcacagag gtggcttatg gcagattttt cctccttcaa 60
actccaaaca taatttttaa gactatgtgc cagtggactc ttccccttata tctctgcacc 120
acaagttgtt ggatgtttcc tcttcctccc ttatgtctac ctcaccaacc tcgctcatca 180
tttggcccctt atccttcctt gtacacctac cttcagattt ctgcttacac tttgatttca 240
gagctttatc ccccagtcct cgag 264

<210> 291
<211> 151
<212> DNA
<213> Homo sapiens

<400> 291
gaattcggcc aaagaggcct acgaatacct tcatttacct gtgtcttctg ataacacctc 60
tcagaaagct atagttcttg aaagtttcta taggatttct aaaatttcaa atatgcagtc 120
acttaaaaaa aaaccacacc acgtactcga g 151

<210> 292
<211> 476
<212> DNA
<213> Homo sapiens

<400> 292
gaattcggcc aaagaggcct attacctgta gtttgctttt tattggatat ctatttatta 60
tatatacata cttttaatga agcataataa atatatgaga atgtgcacat atcaaagtca 120
caactgtgcc aatttttaca ctgttcactt ttgtaaacaa tactcagatc aagaaacaga 180
acattagcaa taagaacata gcaacaaagt gccttctcgt cctccttctt tctagttact 240
gcctgcctct tcaaaagtta cccttgctga cttgtaacta ctagactagt ttaatctatt 300
tttggacctt atataaatgg aatcatgcaa ttatatatat atatttattt ttatgactgg 360
cttcttattt tccacattat gtgagcaaga ttcatccata ttgctgtata taggttctca 420
ctacttcata atctatattg tatttcatta tgtcactaca acaaggttcg ctcgag 476

<210> 293
<211> 503
<212> DNA
<213> Homo sapiens

<220>
<221> unsure
<222> (28)

<220>
<221> unsure
<222> (33)

<220>
<221> unsure

<222> (111)..(112)

<400> 293
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cgggtgcccg ccgccacgcc cgactaattt ttngtatttt tatttttttt nnagtagaga 120
tgggttttcg ccgtgttggc caggatggtc tcaatctcct gacctcgtga tccacccgcc 180
tcggcctccc ggggtgctgg gattacaggc gtgagccacc gcgcccggcc tttttagaa 240
ctttctagga atctgttttt ccaattgctt tgtatatcag gctctctgcg tctgtcagaa 300
ctgctactgc atgtataaca ctgtctttaa tgttcacttt tgtgttcaga tatttgtata 360
ttcagttttg ttgactgtag ttttccttaa gggttttctt aaagcaatga ctatttatta 420
tgtttctcta tgttctaaaa cttagtgcac tgttgtctac cttatgctta ctgtatgtga 480
caacttttca gggaaacctc gag 503

<210> 294
<211> 264
<212> DNA
<213> Homo sapiens

<400> 294
gaattcggcc aaagaggcct acttgctttg tgtatctcat ttaatttgtt ataaggtagt 60
actgatttta gcatattaat gcgatttctt ccttgttgtt tgctttggtc tgtgttcaat 120
ccagagagct taaattgtca ttattttggg aagaaaacct gtatttttgt tagtttacaa 180
tattatgaaa tttcacttca ggagaaactg ctgggcttcc tgtggctttg ttttcttagt 240
tactttttcc gtgcctgcct cgag 264

<210> 295
<211> 218
<212> DNA
<213> Homo sapiens

<400> 295
gaattcggcc aaagaggcct aaaagttaaa aataggcttt ttaggaactc actctttaga 60
tatttacatc cagcttctca tgttaaatat ttgtccttaa agggtttgag atgtacatct 120
ttcatttcgt atttctcata ggctatgcca tgtgcggaat tcaagttacc aatgtaacac 180
tggccagcgg gcccagcaat ctccatgtgt acctcgag 218

<210> 296
<211> 243
<212> DNA
<213> Homo sapiens

<400> 296
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tctgagattc atttcattgg gctttttgtt ttattattat tatttctcag tattgtttta 120
tagcatcaca ccaaagtaca gttcagtaaa agcagtctct acctgtctag cttgatagag 180
gtagattttt agagaatcca aggcaatgag taggtaatgt tcatctttca agcagttctc 240
gag 243

<210> 297
<211> 299
<212> DNA
<213> Homo sapiens

<400> 297
gaattcggcc aaagaggcct attttctttc cctaaatgct tcatctccct atccctcctg 60
cagtgaacct aatgtcctcg atgactccca gggcctggcc gccgagggca gcctctctag 120
gtacagtgtc aatgctacct gtctattggt gtctgtgctg gcaaactagc tgttccctgt 180
ctcctctgtc tctctgtctt ctctgtctct tctcgccccg tcttaatatc tatttccatt 240
ccttgccctt tgttgttcat gaacatatga gcctggaagt caaaggtgta gcactccag 299

<210> 298
<211> 221
<212> DNA
<213> Homo sapiens

<400> 298
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tagccatcta ctgggctggc agccctcaca tggctggcct gccctgtctc gtgagatgga 120
tcagccttga ggtgacctgt caggaaagga catttgggct ggaagtagca gaagcctctg 180
tgagccatcc ttcaggcaga actagtcagg agcagctcga g 221

<210> 299
<211> 247
<212> DNA
<213> Homo sapiens

<400> 299
gaattcggcc aaagaggcct aggaattaag gtcaaactaa ttctcacatc cctctaaaag 60
taaactactg ttaggaacag cagtgttctc acagtgtggg gcagccgtcc ttctaatgaa 120
gacaatgata ttgacactgt ccctctttgg cagttgcatt agtaactttg aaaggtatat 180
gactgagcgt agcatacagg ttaacctgca gaaacagtac ttaggtaatt gtagggcgag 240
cctcgag 247

<210> 300
<211> 269
<212> DNA
<213> Homo sapiens

<400> 300
gaattcggcc aaagaggcct aatgtaatga tgattggaaa aatgatgata gacatgatgt 60
actttgtcat cattatgctg gtggttctga tgagctttgg ggtcgccagg caagccatcc 120
tttttcccaa tgaggagcca tcatggaaac tggccaagaa catcttctac atgccctatt 180
ggatgattta tggggaagtg tttgcggacc agatagaccg taagcaagtt tatgattctc 240
atacaccaaa gtcagctccc ttgctcgag 269

<210> 301
<211> 159
<212> DNA
<213> Homo sapiens

<400> 301
gaattcggcc aaagaggcct agtcgtcctt tctgtttact cctttttttg atatattatt 60
ttcttgtccc tatctgtatt taatagactt tcctttttttc atttcctctc tctactgatt 120
tgaggtatga atactctgtt tctatttgtt atcctcgag 159

<210> 302
<211> 154
<212> DNA
<213> Homo sapiens

<220>
<221> unsure
<222> (109)..(110)

<220>
<221> unsure
<222> (127)

<400> 302
gaattcggct aaagaggcct agtggggtga acggcagctt gaagaaatga ctgttctctt 60

tctgaaattc ataattctat ttcctgtgac cccaacccgc aaagggctnn ttrttttgga 120
aagcctnaaa aaaaaaaaaa cacccacgct cgag 154

<210> 303
<211> 210
<212> DNA
<213> Homo sapiens

<400> 303
gaattcggcc aaagaggcct aatttaagaa cattgaaatt acatcaagta ctctctcaga 60
ctacagtgga ataaaattgc aaatcaactc ctaaaggcat ccccaaacca tacaaataca 120
tgcaaattaa ataacttgct cctgaatgat cattgagtca acaaggaaat caagatggaa 180
attaaaaaat tatttaaact gagtctcgag 210

<210> 304
<211> 439
<212> DNA
<213> Homo sapiens

<400> 304
gaattcggcc aaagaggcct aggggatgtt tggaagagca gaaatattag ttggttttta 60
atatgtacct tgtttgtact taaaaatagg aaggatgacc tctgttatgt aatggcagaa 120
tgcttagcaa aatttttttcc tgcagttatg tagaaaacac agctttcagt ccataaactt 180
gtatatatag ttaaggagat tgtcaagcaa agtgctaaag gtgccaggag cctatagtaa 240
actgccagag tatttaggct atttcaagag attaggagtt gctccgtata tcctctcatt 300
caagccagag ggcctctagg aagaggaaca aaaaatgaag aagaggttat gataaaaaga 360
tttatggata tgacttttgt ctaatcgagc aaaaatctat agatggaaat ctatacgtaa 420
ggcccacaaa gtcctcgag 439

<210> 305
<211> 564
<212> DNA
<213> Homo sapiens

<400> 305
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gaagcctgtg cagtccatca acgcccatcc tttccaactgc atctgtatca agtttgaccc 120
catggggaag tactttgcca caggaagtgc agatgctttg gtcagcctct gggatgtgga 180
tgagttagtg tgtgttcggt gcttttccag gctggattgg cctgtaagaa ccctcagttt 240
cagccatgat gggaaaatgc tggcgtcagc atcggaagat cattttattg acattgctga 300
agtggagaca ggggacaaac tatgggaggt acagtgtgag tctccgacct tcacagtggc 360
gtggcacccc aaaaggcctc tgctggcatt tgcctgtgat gacaaagacg gcaaatatga 420
cagcagccgg gaagccggaa ctgtgaagct gtttgggctt cctaatgatt cttgagagga 480
ggttgtaggg agaggaggcc ccggcagagg tctttccttca tgtggttagt ttggtctgtt 540
ctctcggagt gggtgggcct cgag 564

<210> 306
<211> 258
<212> DNA
<213> Homo sapiens

<400> 306
gaattcggcc aaagaggcct acttgaacag tcaagaacaa attaaagttt ccacggcaaa 60
tttgttttca aaatgccgaa ttgcgaaaca attgctggct tcacgtttct gaatacctttt 120
aatagtttct ctgcgttgca gtttgtaagt ttccttgtca tgacacagtc gataaataaa 180
gaaacccagg tgatcaatgt tttcaatgcg atcagtaata accatgtgct catgaatcag 240
ataggactga ggctcgag 258

<210> 307
<211> 352

<212> DNA
<213> Homo sapiens

<400> 307
gaattcggcc aaagaggcct agggaaggtt ggttccccgt ctgtctccct gcctcttctt 60
cctctacggg tccctctgct ccacaggggt agaacatcaa tctgtgcgag gaaggccagg 120
cggagggtgt acccactgcc ttgcactggc cttctcccta gagggccggg aggcaggaag 180
agccatttcc tgtggggcca cagcactggg cacagttaaa agtagcaggg cccagatatg 240
ccttgggact ccagtgtgag cctcgtcctt gtttccagct ggaaggaagg caccctcttg 300
cccaagacag gacactttgc tgcctggggc cagcacctgc tgaatcctcg ag 352

<210> 308
<211> 405
<212> DNA
<213> Homo sapiens

<400> 308
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acccaacggt gagctcagag caagcttcac gcaggacgct ccgaaacact gtgtggaggg 120
ggctgtgttg tgggcacctt ggggcctgat tctccttcct ccgaacgggc tccttgatgg 180
cctggccaca ggggcagctc cccattggct gttaggacca gagtgtgaag aagaagtgaa 240
atataaatat gtatacatat ataaatatat ttttaattac atgtcgtgtc acggtggctc 300
cagacatact gtttgcctag tttattccac tgcttgaaag cgcttcctag ccaatctgaa 360
caacaacact ttaagctgtt tttctaaatg caggtgctac tcgag 405

<210> 309
<211> 207
<212> DNA
<213> Homo sapiens

<400> 309
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gtggcccaga tctcagagcc cttggctgct gcagacatcc cagcctacta catcagtact 120
ttcaagtttg atcatgcact tgtccccgaa gagaacatca atggtgtcat cagtgccctg 180
aaggtcagcc aagcaaagaa gctcgag 207

<210> 310
<211> 252
<212> DNA
<213> Homo sapiens

<400> 310
gaattcggcc aaagaggcct attctggaac actatagtaa aggtatttcc tacttggctg 60
gcgcccaatc tgataacttt ttctggcttt ctgctggtcg tattcaattt tctgctaatg 120
gcatactttg atcctgactt ttatgcctca gcaccaggtc acaagcacgt gcctgactgg 180
gtttggattg tagtgggcat cctcaacttc gtagcctaca cgctagatgg tgtggacgga 240
tgcaaactcg ag 252
<210> 311
<211> 227
<212> DNA
<213> Homo sapiens

<400> 311
gaattcggcc aaagaggcct agtgatttac cattttattc aaaaaaatta gaagaagagg 60
acagaaatct agttgtcttc aggctccatt tgattgaggt gttattcctt tgtctttgaa 120
ttatatttta ggttaggccg aatggaaact ttatttggat tgcacatctg attatattgt 180
gaacatcaac cttgggtata ggaaatttca ttatgaggct actcgag 227

<210> 312
<211> 188

<212> DNA
<213> Homo sapiens

<400> 312
gaattcggcc aaagaggcct ataaaccgtc gattgaattc tagaactgcg ctccagcctg 60
gacaatagag ggagactgtg tctcaaaaaa aaaaaaaaaa aatctgtatg gaggaggtct 120
tacaaatatt agtaaccaca ctttttgttt tttttcttca acttttcagt tttggggcaa 180
cactcgag 188

<210> 313
<211> 412
<212> DNA
<213> Homo sapiens

<400> 313
gaattcggcc aaagaggcct agagcaaaat tactgagttg ctctttatcc tttcgttgac 60
tgtcagacct acatttttcc tcagattgca ttatttgatg cttacattgc attttttttt 120
tcttttgaga tggagttttg ctcttttttc ccaggctgga gtgcaatggc gtgatcttgg 180
ctcactgcaa actccgcctc ccgtgttcaa gcgattctcc tgcctcagcc tcccaagtgg 240
ctgggattac aggtgtgcac caccatgccc agctaatttt gtatttttag tagaaatggg 300
gtttccccggt gttggtcagg ctggtcttaa actcctgacc tcatgtgatc caccogcctc 360
tgtctcccaa agtgctggga ttacaggcgt gagccacgac tctaggctcg ag 412

<210> 314
<211> 230
<212> DNA
<213> Homo sapiens

<400> 314
gaattcggcc aaagaggcct agattaaatt agttaccagt aaataataag tttgttttgt 60
gaatgcatat gtttattgtg tgtttattta tttatttatt ttctgcaggg gacaggctct 120
taagtgtaca ctgggtggcc gcctgccaac tccgagtggc tccctccccc acacaaatgt 180
ttattgatct ttttccctcc agtaatgtgt taccaggtgc ttccctcgag 230

<210> 315
<211> 259
<212> DNA
<213> Homo sapiens

<400> 315
gaattcggcc aaagaggcct aagcttttac agtggactct ggtattttat agttctccac 60
tggcagctga aatacgtgcc acagtctcaa tcggcaggca ggacaactta ggacataatt 120
tattaaaaag cagattcttt tattagatta aatagtaaac aaaatgattc aaataatggg 180
ttatttacat ttctgcatcc ttggagtaaa cacctacttg aagcataaag ctagagaaga 240
aatcaaaacg tctctcgag 259

<210> 316
<211> 217
<212> DNA
<213> Homo sapiens

<400> 316
gaattcggcc aaagaggcct agtgacatca tatgagtttt cccaaaagtt tcctcctaat 60
ttgcctccta catatctctt ccctgatgtc cagaataatt tacggtcctc tccccatcgg 120
gtgtgtgtgt gtttgtttgt ttgttttttg tgactgcgag gaggggagtg gacccctcaa 180
ccatgtgcgt gcccccactg ctgccatccc actcgag 217

<210> 317
<211> 251
<212> DNA

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<213> Homo sapiens

<400> 317
gaattcggcc aaagaggcct accatcatca tctttgccac tgtcatgttt tatgctgaga 60
agggcacaaa caagaccaac tttacaagca tccctgcggc cttctggtat accattgtca 120
ccatgaccac gcttggctac ggagacatgg tgcccagcac cattgctggc aagattttcg 180
ggtccatctg ctcactcagt ggcgtcttgg tcattgccct gcctgtgcca gtcattgcat 240
ccaacctcga g                                                       251

<210> 318
<211> 239
<212> DNA
<213> Homo sapiens

<400> 318
gaattcggcc aaagaggcct atggatatgg tattttatat ttgttttctg tcttgaaatt 60
atagaaaata aaacgatata aaggcatttt atggtgtttg ttgatagctt attatattac 120
attgaaaagg aatcaaactg ctctcttgca ttctaacttc aatatttacc taaatgtttt 180
ttgtgtctgt ccctttattt ctgtttactc tggtatctgc ctgctgtccc ccgctcgag  239

<210> 319
<211> 233
<212> DNA
<213> Homo sapiens

<400> 319
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agaggcccaa gaaaaatcgg atttagtgtc ccttactgat gcattatcga aaacctgtta 120
gagtcctaag cgttctcctg ttagtattgg gaccttacca ctgtcctata aatatgttat 180
gccccaaaaa tgaagtggag ggccataccc tgagggaggg aagggatctc gag       233

<210> 320
<211> 307
<212> DNA
<213> Homo sapiens

<400> 320
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tctcttcttc ttaggcttgt ctgcacacag atgtgctttc tgcttatgaa tttaggagaa 120
ctacatccat aaattacatc acacctttcc tgcctacatg caattttcct agacttcaaa 180
atttacaaa ccagagagat caagatgcac aggcttccac tcgatgtccc ttgctgtatt 240
ctgaggctaa aaagactaac actgatttag tggctgtctg caaggtaaaa gcattgcttt 300
gatcgag                                                            307

<210> 321
<211> 353
<212> DNA
<213> Homo sapiens

<400> 321
gaattcggcc aaagaggcct aattaaagaa ggagaagcaa gcggatttca gagaggttgt 60
tcttcagaaa aaaaatggtt atttctttga actcatgcct gagctttatt tgtttattgt 120
tatgccactg gattgggaca gcatcacctc tgaatcttga agaccctaat gtgtgtagcc 180
actgggaaag ctactcagtg actgtgcaag agtcataccc acatcccttt gatcaaattt 240
actacacgag ctgcactgac attctaaact ggtttaaatg cacgcggcac agagtcagct 300
atcggacagc ctatcgacat ggggagaaga ctatgtatag gcgcaatctc gag       353

<210> 322
<211> 213
<212> DNA
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<213> Homo sapiens

<400> 322
gaattcgcca aagaggccta gaaaagagag tccttaatgg aatggctgaa ttcattgctc 60
ctactacttt gtttgtatat atatcctcat agtcatcaag taaatgattt ttcttcactg 120
cttaccatgg acctgggacg ggtagataca tttaatgaat ccagattttc tgttgtatac 180
acacctgtca ccaacacgac ccaacttctc gag 213

<210> 323
<211> 182
<212> DNA
<213> Homo sapiens

<400> 323
gaattcggcc aaagaggcct aattgaattc catatatgac tggcggacgg gtcatgagga 60
tgctggcagt aatactcttg gtagtgtttt ggtttctcat tggctggact tcatctgtgt 120
gccagaattt ggagaaacag atttcactta ttggccaggg gaaaacaccc gatcacctcg 180
ag 182

<210> 324
<211> 263
<212> DNA
<213> Homo sapiens

<400> 324
gaattcggcc aaagaggcct aggcagcagg tgtggccagt ccctctgcca aggcctgtgc 60
cagaggggtt ggccagttgg agcctgggtc agcctcagca gcctatcccc atgtcctcta 120
tgcccctaat ttgcttcctc atcttggagg gtttggggag aagttggcgt gccaccccca 180
caacccctga ggaggtgtag acccagtctg agagccgcaa gcactgaggc agggcctgag 240
actggacctg ggtgtcgctc gag 263

<210> 325
<211> 230
<212> DNA
<213> Homo sapiens

<400> 325
gaattcggcc aaagaggcct aggctgtaag tgtaaaatac acaccagatt tcaaagaata 60
aatatatgct aaaacaatag tttggatatt aaataccttt ggcctttgca acatttgaat 120
tccaacaacg gatgaacttt atataccatt tgatgaatat catctatttg gataatatcc 180
ttagtattta cagatttaat attccaagtg ttaatgtacc acccctcgag 230

<210> 326
<211> 206
<212> DNA
<213> Homo sapiens

<220>
<221> unsure
<222> (71)

<400> 326
gaattcggcc aaagaggcct agaatgtcac agcatcttga cacaaatttg cctatgcctt 60
tgatttttgt ngttgttgtt gtttttattt ttttgagacc agagtcttgc tctgtcaacc 120
caggctggag tgcagtggcg cgatcttggc tcactgcaga ttctgcctcc caggttcaag 180
cgattcatgt gcctcagcct ctcgag 206

<210> 327
<211> 338
<212> DNA

<213> Homo sapiens

<400> 327
gaattcggcc aaagaggcct agtgttgagg agcctttaaa ctagagccca cgcttacctg 60
tgaagctgtg acgtctccta atgtggttgc tttgcgtatt caacttagga catttggttt 120
tactgttaaa ccacggtttt gtttgttgct tacagtttga caacttaaat gctgcgcatg 180
aaacctctaa gttggaaatt gaagctagcc actcagagaa acttgaattg ctaaagaagg 240
cctatgaagc ctccctttca gaaattaaga aaggccatga aatagaaaag aaatcgcttg 300
aagatttact ttctgagaag caggaatggc atctcgag 338

<210> 328
<211> 200
<212> DNA
<213> Homo sapiens

<400> 328
gaattcggcc aaagaggcct aatcaaagtt gaccgaaaga ttttgaaaat ccttaccagt 60
tgtttgtcat atgttaaagt cttatggtta attttattta ttttatcttg ttctcttgct 120
ggttattggc agactcagtc tttctgtttt cacaaagaac tcatgaagag gacgataggg 180
aaacccacgt gtcactcgag 200

<210> 329
<211> 259
<212> DNA
<213> Homo sapiens

<400> 329
gaattcggcc aaagaggcct aattaattca aagacctgta ctaacattct gaaatatctg 60
ctagccgtaa taaaaaaatt aatgtacttt atgttcttag ctccccacaat ttagcctaaa 120
tatttgccct agcatgctta tactgaatcc aagcaaacat tgtcatagcc gttcctcttc 180
tttatttaaa agcgttttta cctttctcag catcctgcaa gttacttcct ccttcctttg 240
ttctcctcta cctctcgag 259

<210> 330
<211> 248
<212> DNA
<213> Homo sapiens

<400> 330
gaattcggcc aaagaggcct acctaaaccg tcgattgaat tctagacctg cccaaaatat 60
atctggtacc caatttcata ggttccattt tctaaacatt attttataag ctcttatctt 120
tgacgtcatt gcttttactt taggccatca acatttcctt ctgcactatt gttactgccc 180
tgccttatag ctttgagaat ctcctcattg ccaagtggaa ccccatgttt tttagaaatt 240
tgctcgag 248

<210> 331
<211> 137
<212> DNA
<213> Homo sapiens

<400> 331
gaattcggcc aaagaggcct aatttagggt cgttttcagt cttgatacca cagagaatgt 60
tgcatttgat aacctacata tgttgtttca tgtgtatagc tgtatgtagc gggtcagtac 120
gtgatgcgga actcgag 137

<210> 332
<211> 213
<212> DNA
<213> Homo sapiens

<400> 332
gaattcggcc aaagaggcct actgttaaat tatcctctat taaacatttt tccacttatg 60
gtttcttttc taacttcagc tgccccagcc aagtgccact cttcctttgg tactttgttc 120
cttttagaag tatcttttgt gtgtgtgtgt gtgtgtgtgt gtgtgtgtgt gtgtgtgtca 180
tatgcaaatg acaaggcaaa atggcaactc gag 213

<210> 333
<211> 266
<212> DNA
<213> Homo sapiens

<400> 333
gaattcggcc aaagaggcct agaatctgac ctgccagttt tgtttttaga agaacagaat 60
ttagtggatc agtttttttc aggatgcagt atcttttgtt gatcactctt tttcttcatg 120
tacaggctcc aatggctttg ttttaccccg caacttttgg aatcgttgga cagaaaatga 180
cgactttgca gcacagatct cagggcgatc ctgaggatcc tcacgatgaa cattacctgc 240
tggccacaca gagctgtgtt ctcgag 266

<210> 334
<211> 215
<212> DNA
<213> Homo sapiens

<220>
<221> unsure
<222> (115)

<220>
<221> unsure
<222> (150)

<400> 334
gaattcggcc aaagaggcct atgagtaaca ggtactgtat gtttagcatt ttgaggaacc 60
accaaactct tctccaaagc agtggtacca ttttacattc ccaccatcag tgcangtggg 120
ttctgattct ctatatcctt gccagccctn gttattctac tggttgtgaa gtggtatctc 180
aggtggtttt ggtttgcatt tccccccccc tcgag 215

<210> 335
<211> 384
<212> DNA
<213> Homo sapiens

<400> 335
gaattcggcc aaagaggcct aggcagacca actggcccaa aacagagctc cttttcttct 60
ttgttctgcc tggactggtt ctttaaccct ttctcctatc tctttctcct cttgatgtta 120
aatgttactt tgtcatggaa tgtttaactt gtaacattta tatattgatt aattatacta 180
ttatgtatgg tttacaatat tgactggctt gcgtgcccac agctctgact actgagtgaa 240
caggaagtac tgttagctgt ggaaggtata cagatcatca gcagtaaatc catacaggcc 300
tgaagcaacc tcaattcttg cctcctcaga agaaagaatt ccactgaggg gcataaggca 360
gaaggagaaa ccgcggatct cgag 384

<210> 336
<211> 207
<212> DNA
<213> Homo sapiens

<400> 336
gaattcgcgg ccgcgtcgac tcatctcttt cccccttttt acctcatgcc aggtcccaag 60
aagaatcacc acctttggca gaaaatgatg gtaattttta ttttatttta tttatatttt 120
tttgagacaa gatctcgctc tgtcacccag gctggagtgc agtggcgtga tcacggtgca 180

ctgcggcctc aacctcttgg gctcgag 207

<210> 337
<211> 167
<212> DNA
<213> Homo sapiens

<400> 337
gaattcggcc aaagaggcct acaggaacat ctactgggga tgactgttag gcagcttgtg 60
atgatgtttt ttaaaaaacc taagtaactt ggggagacag agcatttcaa acccatatag 120
acacctatca tacctgtata tcccctaata catggcgcaa actcgag 167

<210> 338
<211> 153
<212> DNA
<213> Homo sapiens

<400> 338
gaattcggcc aaagaggcct actcaggact ctctcaatga aactgttttt aaatttttct 60
ggtagatgct tgcagagcag agagtgggat ttcctggttt tctatggctt ctttgctgtt 120
gtctctgtat gtgagttcat accgcaactc gag 153

<210> 339
<211> 184
<212> DNA
<213> Homo sapiens

<400> 339
gaattcggcc aaagaggcct agccaaagaa catctgaggt aggtaacacc tgcatgtgaa 60
aaactgtgat atgaatctta tttataaaaa agtcataact aaaacccttc tagaccaaaa 120
agttactgtg tgtttgttaa taatcttcat agtactattg gaatgctcaa tcagtcaact 180
cgag 184

<210> 340
<211> 226
<212> DNA
<213> Homo sapiens

<400> 340
gaattcggcc aaagaggcct agtcttctag aagttttata gttttaggtt tttacattta 60
gtttctttca ttcttgagtt aatttttgca tatggtacag ggtagggatc aaagttcgtt 120
ttttggccta tggatgttaa attgtttttg catgactttt tgcaaagacc atcctttctc 180
cactgaattg tctttgtact tcaaaaatca gttgtccaca ctcgag 226

<210> 341
<211> 231
<212> DNA
<213> Homo sapiens

<400> 341
gaattcggcc aaagaggcct aattttgtat ttgaagatta tttatatcag gtattacttt 60
gtttttcccg ggatacatct gtgttgagtc actttgcatt caacagtgcc tcgccaccaa 120
aatcatacat aagaggaaaa ctaggactgg aagaatatgc tgtcttttac ccaccaaatg 180
gtgttatccc ttttcatgga ttttcaatgt atgttgcacc acgagctcga g 231

<210> 342
<211> 152
<212> DNA
<213> Homo sapiens

<400> 342
gaattcggcc aaagaggcct aggaaaagat aaaagaaaac tcttgagatt ttgagtgtt 60
gttggttgtt gttttctccg ttcagtttct ttctttttat aacttggatt atgaaactaa 120
actttaaccc aaaattaacc ctgttactcg ag 152

<210> 343
<211> 235
<212> DNA
<213> Homo sapiens

<400> 343
gaattcggcc aaagaggcct acctgcccac aaccaactct aataaatttt ataacattac 60
tagtacgcac agatatatat gaataactaa aaaagtttaa ggaagtgata tttaccctta 120
ctacatatga cacgtgatga tattgctatt ctattttact ctttttattt ttttcagact 180
cggtctcact atgttgccca gactggagtg cagtggctat tcccaggtac tcgag 235

<210> 344
<211> 156
<212> DNA
<213> Homo sapiens

<400> 344
gaattcggcc aaagaggcct attggaaacg ttttggaact agatcgtggt gatggctgca 60
cgacattgtg agtataccaa acacctatgg attttaaact ttatttattt atttatttat 120
ttatttattt atttatttat gacaaagagt ctcgag 156

<210> 345
<211> 241
<212> DNA
<213> Homo sapiens

<400> 345
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cccatcataa catatttcgg aaaccttatt ccaattggtc cttcaagctc aaatgtcaac 120
tctacttcct cagaagaagg gtatatttta catattcctt agtgttctag aagttcttca 180
ttcacaccat cctgactgca ctgaacccac catggtatta tcagcaccag gcaatctcga 240
g 241

<210> 346
<211> 373
<212> DNA
<213> Homo sapiens

<400> 346
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gggaggccga ggcaggtgga tcacttgagc tcaggagttc aaaaccagcc tgagcaacat 120
ggtaaaaccc tatctctaca aaaagtacaa aaattagcca ggtgtgattg catgcacctg 180
caatcccagc tactcaggaa gctgaggag gagaatctct tgaacccagg aggtggagac 240
cagcctgagc cacatagtga aaccccatct ctacaaaaaa tttaaaaatt agctgtgtgc 300
ggtcacgcgc acctgtagtc ccagatattg gagggcagtg gggggtggcg ctgaggtggg 360
aggatcactc gag 373

<210> 347
<211> 239
<212> DNA
<213> Homo sapiens

<400> 347
gaattcggcc aaagaggcct acgagcatga gtggggattt gtctctcatt ccctgggctg 60
gaagtacctt cctcctggct ctctgtgagg cccccctctt ttctctgttg tctgtttctc 120

accagctcct gcttctccca tggggacttc tctgtcacct ggaatccctc ttcccgcacc 180
ccagctgact ctgagctctg ctaactctgt ccacccctgc caggcccttt ccactcgag 239

<210> 348
<211> 192
<212> DNA
<213> Homo sapiens

<400> 348
gaattcggcc aaagaggcct acgagagggg gggagaaagg aaattaaaaa ctgtgaacag 60
aataacgatc gttacttaaa aaatatgatg gtctctacca tgttagtaca tttttttgatt 120
caggtaacgg ttagtagaat gaaacattcc atgaatgaca tgttagttat taagcatgtt 180
agaaacctcg ag 192

<210> 349
<211> 279
<212> DNA
<213> Homo sapiens

<400> 349
gaattcggcc aaagaggcct aggctagtgg tggtctgccc cttcttttag tgggggatgt 60
attagcttca aaatcttcaa cagtgctttt tctttcctggc gactcttctc cagggtgctc 120
catgatcact ccactccctc catctaggat gtgccttaaa gctgggtcct caggggaaca 180
gacggtggtt ccactctcac tgctgcttag gtctaaatct tctaagtaaa ggatcttggg 240
ctgatgcatg cttttgatga atgttttctc tctctcgag 279

<210> 350
<211> 245
<212> DNA
<213> Homo sapiens

<400> 350
gaattcggcc aaagaggcct acaacatgta aaattagagg agaaatttag gtttagatta 60
attgcatgag aaataaaatt agaggacaaa tgttagtatc ttattttggt aatataaaat 120
taattaaaat tatattacta tcaacatctt atactatact ttttttttat tttcatgtga 180
gcctctcaac aacctgtaag gcaggcaggg aaggtgtaac tagtattact gcacatcccc 240
tcgag 245

<210> 351
<211> 263
<212> DNA
<213> Homo sapiens

<400> 351
gaattcggcc aaagaggcct agtacgttaa ggtggttggc cgctggccac taaattgttg 60
tagcaccact tgggaaaaga aaagatggat ttctgtcct taagcctctg gaaactacct 120
ttagccttta gagaattgtg agagaaacat gtttgaatat gaacttgtga gttcctatgg 180
agaaaaaagg tcaatgtaaa atctagcacc aggatatatt tattagagat atgaattgta 240
ctttcctaca ggagaacctc gag 263

<210> 352
<211> 251
<212> DNA
<213> Homo sapiens

<400> 352
gaattcggcc aaagaggcct accggaagtg tggcttcgtt tacagttcgg cacgtaggac 60
ggagggtagt gcgtctagag acacatattc ccaacggatt tgacgatggt gttcggtctt 120
gaatggaaat gtagtcttag gccagtctta ggttttgaa caggatagta gctatccgga 180
gtcgattgag ggccagagca ggcactgggg ttcggatcct gggcaaagtt tcccacgttg 240

agggtctcga g 251

<210> 353
<211> 302
<212> DNA
<213> Homo sapiens

<400> 353
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actcctcttt atctggttac tcttctccca actcttaaat gtatttcctg ccacgttcta 120
ttttagagct tttctctgtt ggagcagcag ccactttttt tgaggcccat ttaaacctct 180
ctccagtctg tttaggggac ttcagtagtt ctttgttgag catgcacccc acatggtgcc 240
cactgccagg cactggggat gcagagacaa agagttccca ctcacccacc acagcactcg 300
ag 302

<210> 354
<211> 207
<212> DNA
<213> Homo sapiens

<400> 354
gaattcggcc aaagaggcct actttttcta attgatttgt ctttttctat atagtctaga 60
taccaatcct ttgttatgcg agctgcaaaa cctctcagac tgttttcttt tttttctttg 120
tttatgcagt cttgctattt gtcatttttt tgctgtatgt ttttcttgtt taggaaatca 180
tcctcatccc aagttcatat actcgag 207

<210> 355
<211> 175
<212> DNA
<213> Homo sapiens

<400> 355
gaattcggcc aaagaggcct acagtttttt tatgtttatt cctaagtatt tcttacttta 60
agatctctag caaatggaag tgtttttaa ttttcgttta aatttttat tgtttatgga 120
aattcaatta atttttggtg ctgctattgc attgtgcaaa tccactgaac tcgag 175

<210> 356
<211> 326
<212> DNA
<213> Homo sapiens

<400> 356
gaattcggcc aaagaggcct actttaactg ggcaggcgcg tgctctgata aaacatggga 60
attttaatac taaaggaaga aagggagagt gaatattctg ggacaacaag cagactctgc 120
cacaggcaat gaccacccta accctgggga agatgcagat gccttcccca tcatctaatt 180
aattcaccat ttattgagca tggactttgt gccagatatt gtgcacaaca cacaggttct 240
tcctttaggc ctcctcctta cagtctagaa ggggcagaca gactgatgaa cacccagggt 300
gctcagggtt cctggggctg ctcgag 326

<210> 357
<211> 462
<212> DNA
<213> Homo sapiens

<400> 357
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actggtttaa aggtaagttt gttatgtttt tggtagattt tgccaggctt ctcccaacag 120
agtagaagtg atttggcctc ataacttcac agtggtttac cactttgttc tatgttctgg 180
ttttgtaaag gatagtactg gaatttgcgt ctgaagacca atattggtgt aactcctgtc 240
agtatattgg taaaatgtag cagaggcagg agtttggatg tttggatggg attccctag 300

gattctacag ccaataaaga tcctatttcc tatgcatgtc ccaggaatca gtaatcctct 360
tttactctgt tgggatgagt ctttttttgt ttctgttcag agtggttact aacttcacct 420
tctttcctca aaccgtcgat tgaattctag acctgcctcg ag 462

<210> 358
<211> 220
<212> DNA
<213> Homo sapiens

<400> 358
gaattcggcc aaagaggcct agtttccttt ttagatctgc tactctgttt ggataatgtc 60
ttattcctta tgttttggtc ccatctttca tggttttatt tttatttata ttttaggttt 120
tgagacaggg tcttgctctg ttcaccaggc tggattgcag tgtccaccgt cttggctccc 180
tgcaacctcc acctcttggg ctgaagcgat ccccctcgag 220

<210> 359
<211> 221
<212> DNA
<213> Homo sapiens

<400> 359
gaattcggcc aaagaggcct agttgggggga caaattgaaa ctcttgtctc aaaagaaaaa 60
aaaaaagaat gagaccttct catatactgc tggtgggaat atatggtaca gatatattga 120
ataacaattt gttactaccc aataatgtca aaatatgtta cacgacccag caatcccact 180
cctacctaca tgcccttaaa actctcacac atggactcga g 221

<210> 360
<211> 223
<212> DNA
<213> Homo sapiens

<400> 360
gaattcggcc aaagaggcct actttatca aagtcaaaat aatttatttg atatatagag 60
agccacactc cagctaatga attattgttg ttcattttac agcatctcag atataaaaaa 120
tttggttgca tcctacatgt cttttttttc tatcttgttc ctcctgtccc ttcctctgat 180
tcttgttgtc ccccctactt ttattttagg ttcagaactc gag 223

<210> 361
<211> 226
<212> DNA
<213> Homo sapiens

<400> 361
gaattcggcc aaagaggcct aatttttttt tagttctttc tgttttccag gtaccgttct 60
cagtgattgg tacttagtag ctcatttcat tttcatgata cctccataag gaaggtatat 120
tattgtttac attttacagg tgcagaaact gagcacaggt gcacaacatt cccaagctca 180
cacagctaat aagtagagga acatgaagta caaggcctgg ctcgag 226

<210> 362
<211> 457
<212> DNA
<213> Homo sapiens

<400> 362
gaattcggcc aaagaggcct aaatttaata tttgttacaa cattcatgca tatgatcagt 60
ggattttttt gttgttgttg aggagggtaa attttaaaaa agaattggta tataaaacag 120
atgcattaaa acagtggtgc ccaacctttt tggcactagg aaccagtttt gtggaagaca 180
gttttttcat ggacctgggg tgggatgagg tggtggatgg ttttaggatg attcaactgc 240
attacattta ttgtgcactt tatttctgtt attattacat tctaatatat aatgaaataa 300
ttatactgct cgccataatg tagaatcact gggaaccctg agcttgtttt tctgaaacta 360

catggtccca tctggaggtg atgggagata gtgacagatc atcaggcatt agattctcat 420
aagaaacagg cagcctagat ccctccccggc actcgag 457

<210> 363
<211> 356
<212> DNA
<213> Homo sapiens

<400> 363
gaattcggcc aaagaggcct actgtcttca caaaaataaa caaacaaaca aataaaataa 60
ataatacctt ttattattta cctctgatct attcctatta cagttccgca ttcagtgtaa 120
tttcccctag gggtaactgc aatttcattt ttttaatata cccaacaaag agctgtagct 180
ccctcctgtc tgcagatcag tgtttatagg acagaatata atattctact atgctaactt 240
tacctttttac ccttttctta gcacgtgcac acacatgtgt gcacatactg tcagagtccc 300
tatttctctc tctctacaca ctgccagtct ctctcccttg tcccgcgcag ctcgag 356

<210> 364
<211> 213
<212> DNA
<213> Homo sapiens

<400> 364
gctaaaccgt cgattgaatt ctagacctgc cacccctaaa atatcaagct cattcacttt 60
ttaaaaaaat tcctttcaga ctctatatca caaatgtatg gtttcttgt tttgtttttt 120
gagacagtcg cactctcgcc caggctggag gcagtggcac aaactcagct caccgcaacc 180
tccacttccc gagttcaagc gattcccctc gag 213

<210> 365
<211> 280
<212> DNA
<213> Homo sapiens

<400> 365
ggtcattttt aaaattgggg acccccagat gtcagtattt gtagatattg tctcagggaa 60
ctataagctg ggtgtaggca tttgggaact ggatgaagta atattttgct atgcagactt 120
tcacttaatc catatttgta tttgttttat tttactttat ttttttgaga cagagtctcc 180
caggctgggg tgcagtggta gaatcacagc tcactacagc cttgacctgt ccggcacgag 240
tgatcctttc acctcggcct cccgagcagc gggactcgag 280

<210> 366
<211> 174
<212> DNA
<213> Homo sapiens

<400> 366
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gagtagtgtc cttgctaaaa gacagtagat atgcaacgcc tcttgctcct gccctttctc 120
ctgctgggaa cagtttctgc tcttcatctg gagaatgatg ccccccttct cgag 174

<210> 367
<211> 532
<212> DNA
<213> Homo sapiens

<400> 367
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atgtgcaaca tctggattca ccttcagtga tttcggcatg cactgggtcc gccaggcgcc 180
aggcagggga ctggagtggc tgtcttttat tcgctttgat tcaagtaatg aaaactatgc 240
agactccgtg cagggccgct ttgccgtctc cagagacaat ttcaaggaca cactgtatct 300

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acaaatgaac agcctgactg ctgacgacac ggctgtctat tactgtgcga ctgggaagat 360
agcagccgcg ggtaccccat ttgactattg gggccgggga accctggtca ccgtctcttc 420
agcctccacc aagggcccat cggtcttccc cctggcaccc tcctccaaga gcacctctgg 480
gggcacagcg gccctgggct gcctggtcaa ggactacttc cccgaactcg ag         532

<210> 368
<211> 229
<212> DNA
<213> Homo sapiens

<400> 368
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acagcagcag gccggggccg tggtcgtggc cgccccccact gagaggcacc ccacccatca 120
catggctggc tggctgctgg gtgcacttac cctccttggc ttggttactt cattttacaa 180
ggaaggggta gtaattggcc cactctcttc ttaccggagg ccactcgag             229

<210> 369
<211> 350
<212> DNA
<213> Homo sapiens

<400> 369
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gcatcttcct tttttgacac taatggaaca atttaatgta atttcagagg gaagcagagc 120
ccctggaaag gctggtgtga taagggaagg ttacccagct ttcctgtcag gcggtgtgtg 180
ggagcagaga gtggcattct ctgcatactt ttggggagaa gagtgggtga gacaggctgc 240
tcagggctgg ggcagagccc aggggaaggg gatggaaggg gaagaacagc ccttcaagag 300
tcctgcagaa attggtggaa gttatttaaa cagaagtgtt cgggctcgag           350

<210> 370
<211> 155
<212> DNA
<213> Homo sapiens

<400> 370
ggacatagtc ccagcctggg ttgagagagc aaaaccctgt ctcaaaaaca aaacaaaact 60
cttcttaaat atcaatttta tttgtttaga cagcgaggca ggtatttttt aacacatatg 120
ccactgctat gttttatatt cgtaccatac tcgag                           155

<210> 371
<211> 228
<212> DNA
<213> Homo sapiens

<400> 371
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aataaagcta ctttaaaaag cccgtttatt tttgaaaccc caacaggctt ctcaaaactg 120
ctgtcattcc taaatacgaa gtcttaaaaa atccacatgt cctcctcagc cagaggccta 180
tggacagcac aaaatacagg ggaatgtcgt ggtggcggct gcctcgag              228

<210> 372
<211> 268
<212> DNA
<213> Homo sapiens

<400> 372
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cagatgggtc ctgtcccagg tgcagctgca ggagtcgggc ccgggactgg tgaagccttc 120
ggagaccctg accctcacct gcactgtctc tggtgattcc atcagtaatt cttattggag 180
ctggatcagg ctgccccccg ggaagggatt ggaatacatt ggatatgtct tttacaacgg 240
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ggacaccaat tccaacccct ccctcgag 268

<210> 373
<211> 480
<212> DNA
<213> Mus musculus

<400> 373
gaattcggcc aaagaggcct acctggtttg tgaattatgg cctggatttc acttatactc 60
tctctcctgg ctctcagctc aggggccatt tcccaggctg ttgtgactca ggaatctgca 120
ctcaccacat cacctggtga aacagtcaca ctcacttgtc gctcaagtac tggggctgtt 180
acaactagta actatgccaa ctgggtccaa gaaaaaccag atcatttatt cactggtcta 240
ataggtggta ccaacaaccg agctcccaggt gttcctgcca gattctcagg ctccctgatt 300
ggagacaagg ctgccctcac catcacaggg gcacagactg aggatgaggc aatatatttc 360
tgtgctctat ggtacagcaa cctttgggtg ttcggtggag gaaccaaact gactgtccta 420
ggccagccca agtcttcgcc atcagtcacc ctgtttccac cttcctctga agaggtcgag 480

<210> 374
<211> 271
<212> DNA
<213> Mus musculus

<400> 374
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ataatttctg acgtagatga gagttctgac caccaccttt ttattactgc ttgaagccag 120
tttaaaccaa caattacata ttcttcaaat ctgctttgaa gtaaagactt taccagagga 180
agtaagtcta cacagcagcc aagtgagata tactgctttt cttcctgtaa actattggtt 240
agaacaggaa ggcaatctac aacaactcga g 271

<210> 375
<211> 423
<212> DNA
<213> Mus musculus

<400> 375
gaattcggcc aaagaggcct aaggatgttt gctagcttcc ccaccaccaa gacctacttc 60
cctcactttg atgtaagcca cggctctgcc caggtcaagg gtcacggcaa gaaggtcgcc 120
gatgctctgg ccaatgctgc aggccacctc gatgacctgc ccggtgccct gtctgctctg 180
agcgacctgc atgcccacaa gctgcgtgtg gatcccgtca acttcaagct cctgagccac 240
tgcctgctgg tgaccttggc tagccaccac cctgccgatt tcacccccgc ggtgcatgcc 300
tctctggaca aattccttgc ctctgtgagc accgtgctga cctccaagta ccgttaagct 360
gccttctgcg gggcttgcct tctggccatg cccttcttct ctcccttgca ccagtacctc 420
gag 423

<210> 376
<211> 333
<212> DNA
<213> Mus musculus

<400> 376
gaattcggcc aaagaggcct actgtctcgg tgccagtacc tctgggatgg cctcacaaaa 60
ccgcgaccca gctgctgcca gcgttgccgc ggttcgaaaa ggagccgagc cctgcggggg 120
cgccgcccga ggccctgtgg gcaagcggct acagcaggaa ctgatgatcc tcatgacatc 180
tggtgacaaa ggaatctccg ccttccctga gtcagacaac ctgttcaagt gggtggggac 240
catccacgga gcagccggca ccgtatatga agacctgagg tacaaactct ccctagagtt 300
ccccagcggc taccсttaca acgcggactc gag 333

<210> 377
<211> 271
<212> DNA

<213> Mus musculus

<400> 377
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ataatttctg acgtagatga gagttctgac caccaccttt ttattactgc ttgaagccag 120
tttaaaccaa caattacata ttcttcaaat ctgctttgaa gtaaagactt taccagagga 180
agtaagtcta cacagcagcc aagtgagata tactgctttt cttcctgtaa actattggtt 240
agaacaggaa ggcaatctac aacaactcga g 271

<210> 378
<211> 377
<212> DNA
<213> Mus musculus

<400> 378
gaattcggcc aaagaggcct agcggactgg agctgaaagt gttgattggg aaacttgggt 60
gattcttgtg tttatttaca atcctcttga cccaggcagg acacatgcag gccaaaaaac 120
gctatttcat cctgctctca gctggctctt gtctcgccct tttgttttat tttggaggcg 180
tgcagtttag ggcatcgagg agccacagcc ggagagaaga gcacagtggt cggaatggct 240
tgcaccagcc cagtccggat catttctggc cccgcttccc ggacgctctg cgccctttct 300
ttccttggga tcaattggaa aacgaggatt ccagcgtgca catttccccc cggcagaagc 360
gagacgcgga tctcgag 377

<210> 379
<211> 390
<212> DNA
<213> Mus musculus

<400> 379
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ttgctcaatg ttcctccctt ccgaccactt ccacttaaat aaagtcttta agtagctgaa 120
ggattaacag tctggtggga ggcaagccat tgaactgaac cacgaggaaa gtatattttc 180
ttcttttctt ttcctgccaa gttttcggtg gcatttgtag aagctggtgt gaaaggctag 240
gaggcattgt tttctattat tcctcggtga agccttttcc cagagcatat gtctccggca 300
ggcagtgtgg gttcttgcca agcatcagaa ccagtctcca gggcctcccg acgccgatcc 360
atagtactgt acagacccac cggactcgag 390

<210> 380
<211> 435
<212> DNA
<213> Mus musculus

<400> 380
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cctgatcatt ttcaagaacc ataggactga ggtgaagcca tgaagtgctt gctgatctcc 120
ctagccctat ggctgggcac agtgggcaca cgtgggacag agcccgaact cagcgagacc 180
cagcgcagga gcctacaggt ggctctggag gagttccaca aacacccacc tgtgcagttg 240
gccttccaag agatcggtgt ggacagagct gaagaagtgc tcttctcagc tggcaccttt 300
gtgaggttgg aatttaagct ccagcagacc aactgcccca agaaggactg gaaaaagccg 360
gagtgcacaa tcaaaccaaa cgggagaagg cggaaatgcc tggcctgcat taaaatggac 420
cccaaggggc tcgag 435

<210> 381
<211> 321
<212> DNA
<213> Mus musculus

<400> 381
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tgctgcacag aaactcgtcc gagagtgaag agaggctgaa gtaatagctc aagtagatac 120

atgccaacag tataaccaca aatgtcacca gccggcagct aatgtatttc atgattaaat 180
gactagagtt ctttttgtc ttcaagtact gctccacgat tgggtacttg aagtggcttt 240
cagatatctc ccacagactc tgccccacat tctcagtcac tcctgggggt ccaggtccgt 300
ctcttaggtc caaatctcga g 321
<210> 382
<211> 223
<212> DNA
<213> Homo sapiens

<400> 382
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cagtacagtg tcagaagcaa attaaagaac ttcgagatca atgtttatct cttcagttat 120
tacatctggt cccagcttgg ccatgtacaa catgctgatt cttttcaacg ttttattttc 180
tttatttagc tttgttgcca aagcttcagc actttctctc gag 223

<210> 383
<211> 258
<212> DNA
<213> Homo sapiens

<400> 383
gaattcggcc aaagaggcct acagaaacat ctcaaggtag ctggtccgcc cccacttccc 60
catctacctc ttgtcctccc cccaacacca ccaccaccct ggctccccctc cctcatgacc 120
gcctggatcc tcctgcctgt cagcctgtca gcgttctcca tcactggcat atggactgtg 180
tatgccatgg ctgtgatgaa ccaccatgta tgccctgtgg agaactggtc ctacaacgag 240
tccaaggttc tccctata 258

<210> 384
<211> 207
<212> DNA
<213> Homo sapiens

<400> 384
gaattcgcgg ccgcgtcgac agtgaaattc ggtgttatgt taatggacaa ctggtatctt 60
atggtgatat ggcttggcat gttaacacaa atgatagcta tgacaagtgc tttcttggat 120
catcagaaac tgctgatgca aatagggtat tctgtggtca acttggtgcc gtgtatgtgt 180
tcagtgaagc acccaacccca gctcgag 207

<210> 385
<211> 193
<212> DNA
<213> Homo sapiens

<400> 385
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cttgtcctta tctgaaagcc atgcggcatc caacgatcca cgcaactttg tccctaacaa 120
aatgtggaag ggattagtca agaggaatgc atctgtggaa acagttgata ataaaacgtc 180
tgaggatctc gag 193

<210> 386
<211> 212
<212> DNA
<213> Homo sapiens

<400> 386
gaattcgcgg ccgcgtcgac catagaataa ttgtgccctt agtcattcac tggtccaaca 60
gtgtcctttc ttattttctt aagatattta tataacagat gcataattac agatatttat 120
gtaacagatg cataataatc ctaatatcca tattgggtac tctttcctcc tttccaaatt 180
tgtttagctt tccaccaccc ccccagctcg ag 212

<210> 387
<211> 227
<212> DNA
<213> Homo sapiens

<400> 387
gaattcgcgg ccgcgtcgac gtgaaaggta gaagggcagg gcagagtatg tactgttttg 60
tgtgtgtgtg ttattttttg agactaagtc ttgctctgtc acccaggctg gagcggggtg 120
gtgtgatctc ggctcactgc aacctctgcc tcccaggttc aagcaattct cctgcctcag 180
tctcctccct agtagctggg attacaaacg cccaccaccc actcgag 227

<210> 388
<211> 163
<212> DNA
<213> Homo sapiens

<400> 388
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aagatttctg aaattgaaat attattcaat catcctgcaa tctaggataa gaatgataat 120
tgctgttaca tcttataaac gatatctttg ggctacgctc gag 163

<210> 389
<211> 223
<212> DNA
<213> Homo sapiens

<400> 389
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tctgttctgt gagatgtcgc caccctgttt gccatctggg aggatctcac tccttcaatt 120
taatctgctc tcttccgtta tttttttagc ttctatgtat tttactttta ggacattcct 180
tggactttgt tctacctctt taattgatga agaaaacctc gag 223

<210> 390
<211> 185
<212> DNA
<213> Homo sapiens

<400> 390
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aatttccagt ttataataca gtattattaa ttatagtcct tatggtgtac attagatctt 120
tagacttact cttcttatat atatgtaact ttacatcctt ggacctacat ctcccctgcc 180
tcgag 185

<210> 391
<211> 221
<212> DNA
<213> Homo sapiens

<400> 391
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tttgttagac tctaaccttg aagtactaac taagcttgct ataaatatac tgtttctcat 120
ctttgctgtc taccttgttg ttaatggaga gtcactttgt agaaaaaaat atactgtttc 180
tcatctttgc tgtctacctt gttgttaatg gagagctcga g 221

<210> 392
<211> 219
<212> DNA
<213> Homo sapiens

<400> 392

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tcaagattca gctgaatctg taggtaaatt tgagttgtat tgccatctta ataattttaa 120
atcttccaat tcatgagcat ggaatgtttt ttcctttatt taggaattct ttattttttt 180
ccaactgtgt tttgtagttt ttgtatgcag gttctcgag 219

<210> 393
<211> 155
<212> DNA
<213> Homo sapiens

<400> 393
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tacttgtttc cttcagaact ctgtggtcat tggtccatct tctgacattg aactctgcta 120
tgaagtccaa ggttaacctc atcctcctgc tcgag 155

<210> 394
<211> 157
<212> DNA
<213> Homo sapiens

<400> 394
gaattcgcgg ccgcgtcgac caaaatttga atcctaagag cttgttacat ataaatatta 60
acagtttacc ctttatgata tgagctacag atattgtcct cagttgtgtt ttcttttgac 120
tttgctaatg ttttattctt gccatgcaga gctcgag 157

<210> 395
<211> 231
<212> DNA
<213> Homo sapiens

<400> 395
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tttggcttaa gtaaataaca ttttttaaa cccactattt tgagcgttca gtggtctgta 120
acagtgtgtt ataccataag aactggtatg aagtggttaa ctactagttt aataatagtt 180
gaagcctggg cgtggtggct cacgcctgta atcccagcgg ggaggctcga g 231

<210> 396
<211> 183
<212> DNA
<213> Homo sapiens

<400> 396
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ctctttcacc tgggtgtctg ggctcaagct ttcccgccca gcctcacttc ctttgcccctt 120
cctcctgcct ttctcaactg tcccaaggag gggcctcat tgtgtctccc gtgcacgctc 180
gag 183

<210> 397
<211> 213
<212> DNA
<213> Homo sapiens

<400> 397
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aaagaatgga tttttcattt tttactacat ttgactgtaa atacagacag cttgataata 180
ataacatatg ctgtggaatt ccccaatctc gag 213

<210> 398
<211> 153
<212> DNA

<213> Homo sapiens

<400> 398
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ttggtttatt tttttttctt tttcttagca aagaagtact ttgagtatgt cctagaacaa 120
tatttttcaa gatgctctcc ctggtcactc gag 153

<210> 399
<211> 288
<212> DNA
<213> Homo sapiens

<400> 399
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tttttactaa aaattcattc tcaatttaat aactagagag ttacagtatt ttttttcagc 180
atgtatttta gtttgtttta tcaccttaat ctccctaata gtcctgcaaa tgtagtactt 240
gttctaacca tactgggatc ccacattata ttagcatatg ggctcgag 288

<210> 400
<211> 203
<212> DNA
<213> Homo sapiens

<400> 400
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gaatctgaag ttttagaaag taggaaaaaa ttacccacaa cccttaggat attgatcctt 120
ctaaaatatt taattttta aacacttttc attttgtttt ccatctcatt tcaatgcata 180
ttcttttaa cagaatactc gag 203

<210> 401
<211> 193
<212> DNA
<213> Homo sapiens

<400> 401
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aaaccatcca ctctgtaggc aagtgcttgt aggtgtcctc actttccaga tgaagtcact 120
gagaagacaa gaggttcaga cacttgccca acctctagta agtgacggag ctgagatcca 180
aacgcgtctc gag 193

<210> 402
<211> 284
<212> DNA
<213> Homo sapiens

<400> 402
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gtcatactaa taaatagcag agctgggatt tgaacccaga ccacggtcac caaactgtaa 180
agggctcaat ggtcaatatt tttggctttg tagtccatgc agtctctgtc acagtgactc 240
aaccctgctg ttggagcaca aaagcagaca taggccgtct cgag 284

<210> 403
<211> 168
<212> DNA
<213> Homo sapiens

<400> 403
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atttctaaa tctttatggt tatgatttgg aataaaatgt gcctaatcct gtgttacatt 120
ctgttcttaa atctgaatgc ttctcattc aattctgagg gactcgag 168

<210> 404
<211> 189
<212> DNA
<213> Homo sapiens

<400> 404
gaattcgcgg ccgcgtcgac ataaattatg gtcctaagta tctttccatg acaaaaaaga 60
acccagtgaa tagaaaattt tattttcatt attatgatag cttatttttct atatgtagat 120
atgtattttc tttttctttc ttttttttg agatggagtt ttgctctgtc gcacaggctg 180
gatctcgag 189

<210> 405
<211> 174
<212> DNA
<213> Homo sapiens

<400> 405
gaattcgcgg ccgcgtcgac gaatccatct ggtcctggtc ctggttctac attttgtagc 60
ttgtgagtat agaggtgttc ataataggtt ctgggaattt tttgtatttc tgtgaggtca 120
gtggtaatgt cctctttgtc atttctgatc ttgtttattt ggcgctcccct cgag 174

<210> 406
<211> 234
<212> DNA
<213> Homo sapiens

<400> 406
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ctaaaatccc taaattctaa aatcccccaaa tcacaattct gagagaccaa aatttcaaaa 120
atataattgt ggaataaagt tttaaaaata tttaaaatac atttgttaca attttaaaag 180
aagactttag agacatataa atacatgact gaacacatta taggtccact cgag 234

<210> 407
<211> 196
<212> DNA
<213> Homo sapiens

<400> 407
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ctcactactt agcactcaag tagaagaaaa aaaaaaagac cattgaaaga gtgaagtcaa 120
gaaaatgaga ggcagggtga gggtggatta ccaagaagcg tatgaaaatc cccaagaatt 180
aaaacaggag ctcgag 196

<210> 408
<211> 232
<212> DNA
<213> Homo sapiens

<400> 408
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gccccgtcta tattttttaat taattaatta attaaagttt ttttttaaag cactcatcat 120
aaaagaatat agcaaaatac caaaaaagga aaaataagcc aataaccaag tcaaaatgag 180
gtgtggagtt ctgactgtgt gtctttgggg cttcttccca tcaccactcg ag 232

<210> 409
<211> 232
<212> DNA

<213> Homo sapiens

<400> 409
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gcatttctag atgtggccct ttgggagtaa catgctttcc cagtccttcc acctccatat 120
acttttcctc accctcctgg acagccagag cactctagag cagatatgca aaaagtcagc 180
tcaaatagac caagtagtgc cgaactgtcc caaagcacac gcacctctcg ag 232

<210> 410
<211> 159
<212> DNA
<213> Homo sapiens

<400> 410
gaattcgcgg ccgcgtcgac cctctgctta ctgtgacagt cgatgatgaa tcttgcgttg 60
ccattttctg ctgtgggtaa ctgcgtgcag tgtcttgcct tgctttctct tcttactgtc 120
ccacagcttg gtttcatgtt acaaacagaa aagctcgag 159

<210> 411
<211> 230
<212> DNA
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<400> 411
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tgatttattt cctttcactc ttttttgtc ttcttgtaag tctttgcctg agcttgaagg 180
tcgggagtag tttacacaat catcattatg ttgcatatgc tggtctcgag 230

<210> 412
<211> 181
<212> DNA
<213> Homo sapiens

<400> 412
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gtggtgaact ctctagttca ctataccttc gtctggctgg aggagtatga taatccaagt 120
gcctgctttt attttcttgt ctgcatgtat tttatatttc tgttttccca tcacactcga 180
g 181

<210> 413
<211> 166
<212> DNA
<213> Homo sapiens

<400> 413
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catatgtctt tagtttttcc taatacottt gttcatgctg ttctttcctt ctcctgagtt 120
gattacccgc ctccttcaac tgtactacat tcatacatct ctcgag 166

<210> 414
<211> 116
<212> DNA
<213> Homo sapiens

<400> 414
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atttatcat ttttcctt cttttttact ttttaaattt tgagcatacc ctcgag 116

<210> 415

<211> 301
<212> DNA
<213> Homo sapiens

<400> 415
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tttgtgtatt ttctacaaac ttggggcctg ccttggtggc tgtcaaagtg tccttttttt 180
agagcagaaa gagttgcagg aaaacatgat gtggtgtttc atgcaacata gtggaaatgc 240
agttttaggt catcaggctg cacttcctct cagtccgcag ccccagagct caatactcga 300
g 301

<210> 416
<211> 355
<212> DNA
<213> Homo sapiens

<400> 416
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atatctttca caaataagac gatataaaga tattttcaga taggtgtata acattcgtct 120
aagtcaagat cgacaaacac tgcctgttaa aataagacag aagctggaaa cggaagataa 180
acctgagaga gaaagcatga ctctggaatc cacctgccat cagagctctc tccagaccag 240
tgctccttcc cttcctcacc ttcctgaatg cctcggcctg gcacctgaac tccccatcgc 300
tgctgccacc ttcccccacc cacttctttc tctttcatgt gtgctactcc tcgag 355

<210> 417
<211> 177
<212> DNA
<213> Homo sapiens

<400> 417
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gaaagaaata taaaggaatc ataaagttga gcagataggt gctaagttga tcctgcttac 120
aatatttgag ataattctta aagtcattat accagtcttg atatgagggt cctcgag 177

<210> 418
<211> 151
<212> DNA
<213> Homo sapiens

<400> 418
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gccttattat ttgtcaatct tataaaaata tatgttaaga aacttatcta tatctacatc 120
tttaaaattt atgatgaggg cagggctcga g 151

<210> 419
<211> 260
<212> DNA
<213> Homo sapiens

<400> 419
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ctgtcttctg ctctgcattc gtagcctgtg gctttgtcat tccctcatct ggaaatggcg 120
gctgcagccc caggcacaat ggcccgttga ggaagaaggg ggacgatgtg cagtgtcagg 180
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gtcataggcc aggactcgag 260

<210> 420
<211> 174
<212> DNA

<213> Homo sapiens

<400> 420
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tttagttttc ttttaaaaag tcagttttaa agttgtataa attaaaaata tttttaaatt 120
tttaaacaga tgctcccccct tcaacccact ctagttatta ccactctact cgag 174

<210> 421
<211> 190
<212> DNA
<213> Homo sapiens

<400> 421
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acaagccaaa attatctgct ggtgactgga actcacagac agaggcttgc tagccctttt 120
gcattgattg agaggctttt caaaattaat cattgctatg atttcaatat ctgttccccc 180
aaaactcgag 190

<210> 422
<211> 173
<212> DNA
<213> Homo sapiens

<400> 422
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gttctttttg agcagcttat ttgaaggtaa cctgcagagt taaaatgcat ttggcatcct 120
tcctaatgag agaccaaaaa tattttcact tggtgttcct gtggtacctc gag 173

<210> 423
<211> 214
<212> DNA
<213> Homo sapiens

<400> 423
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aaagccacct ggctctggta tcttctctta cagatcacct caacacttaa atcctcaaat 120
tctaacatat acatttctac ttattggcat ataaatgttg gtaaatgtac tacaatcatt 180
tcatgcaagg cagctgttgt ctacagtcct cgag 214

<210> 424
<211> 170
<212> DNA
<213> Homo sapiens

<400> 424
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cttccaacaa aattaatgaa taccatatta gtattataaa atattataaa gtaataatta 120
tatcatctat ataacttcaa agtatgatgt ttatacaaag aatcctcgag 170

<210> 425
<211> 187
<212> DNA
<213> Homo sapiens

<400> 425
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tcctcccaat cctgtcctct ctgtgtattt ggtaattgcg taaatcatct ctcccataat 120
taatctcctt taaaatttgg aataatatag ttgttagaat aatataataa tcatgcagaa 180
tctcgag 187

<210> 426
<211> 148
<212> DNA
<213> Homo sapiens

<400> 426
gaattcgcgg ccgcgtcgac agagtctgtg ggaatttgtt ccagtgacag gtggaaaaac 60
tgccctgctc tgagcatcaa tgccttgtgc tgttctaaca ttttggtttt tttctgctgc 120
aatttcacgc ttggcccttt ccctcgag 148

<210> 427
<211> 204
<212> DNA
<213> Homo sapiens

<400> 427
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ccaaatgcag ggtaaggagt actgcagagg tcacagggaa gtcacagaac agtaatacgc 120
tagcaggggc atggggcgtg aagaacagaa gacaggaagc gtttcagaga ctccaaagaa 180
gaaatcaggg ccaaccaact cgag 204

<210> 428
<211> 216
<212> DNA
<213> Homo sapiens

<400> 428
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tttcatggta ttttttactt cataagaaac tatcaaactc aaccaaagag gctttgccac 120
tttgcatctc caccagtaat gtatgaggat tctagttgcc ccctatcctc acaaattagt 180
attgccagtc ttcccaattt tttcctccat ctcgag 216

<210> 429
<211> 214
<212> DNA
<213> Homo sapiens

<400> 429
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gttgacagac atgatgaaag ggaatgtaac aaatgtcctc cctatgattc ttattggtgg 120
atggatcaac atgacattct caggctttgt cacaaccaag gtcccatttc cactgacccct 180
ccgttttaag cctatgttac aacaagaact cgag 214

<210> 430
<211> 137
<212> DNA
<213> Homo sapiens

<400> 430
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atctgggtgt ctttacaagt acctttgagt gaagcaagca agctatgttt atccttcact 120
gtctttccct cctcgag 137

<210> 431
<211> 245
<212> DNA
<213> Homo sapiens

<400> 431
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aagatagctg aaaaagaaca tcactacctc cttaattctc tcattggaaa tttagtttta 120
attttctgat gcttaaaact ttctgtgctt cagtttttcc tttttataaa tgtttgatca 180
tatttaccat ctccctaatt atggtagaca taattatcat aattaggtct agccccagac 240
tcgag 245

<210> 432
<211> 248
<212> DNA
<213> Homo sapiens

<400> 432
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ctagaattat cgtttagttc aactttttaa atttatctat aaggaaacta agctctggaa 120
agatggaaag aaatcttcct agaccaaata agccacataa ggattctgta ttttatttgt 180
tttgtttttg tttatttttt agtttgtttt ttcatgtaag gatttttaat cttccccacg 240
gactcgag 248

<210> 433
<211> 203
<212> DNA
<213> Homo sapiens

<400> 433
gaattcgcgg ccgcgtcgac gatataacca ttcctaggat atacctaaa tatctctgaa 60
gtcagtattt ctcctgagat agagttaagt tggtttctcc ttcagttaaa gactccttgg 120
tagtttggtt tagtttcaaa agtcattcag ctattgaaac aatgaaaaca ttacagcatt 180
tagtttccgt gattgtactc gag 203

<210> 434
<211> 218
<212> DNA
<213> Homo sapiens

<400> 434
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tattagctac tagtttcatt ttaacttagt taaggaggca taaaatgtta ttaaaggact 120
tatttttatt tatttattta ttgagacagg gtcttgctct gtcacccagg ctggagtgca 180
gtggtgtgat cataggtcac tgcagcctta aactcgag 218

<210> 435
<211> 239
<212> DNA
<213> Homo sapiens

<400> 435
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gggaatttag accettgaca ttgaaagcta atatctaaat ctgaggtttt catcctatca 120
tgaaattgtt agctggttac tttgtagttt ctactttgtg gttgctactg tgtgcttgcc 180
ttataggacc tatgggctat gtacttaagt gtgtttttgt ggtagcaggt cgcctcgag 239

<210> 436
<211> 217
<212> DNA
<213> Homo sapiens

<400> 436
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gaatcaggaa aaaagtttta aaattcattt tttaaaaata agttcaggtt ataacattta 120
agaagtttaa tcttgttttt tcagacttgc agaaaatact ttagaaatgc tgactctaaa 180
atttatcttt catatgttgc tggtaggtag actcgag 217

<210> 437
<211> 160
<212> DNA
<213> Homo sapiens

<400> 437
gaattcgcgg ccgcgtcgac cttcattgat ctttttctct tcctgcatgg taatgagaac 60
tgcccgtttc acctcccttta cctatcattt tcttccttac tgcattttca cagcatgcta 120
tttctctgag atgttccagc aagcaggcca agcgctcgag 160

<210> 438
<211> 180
<212> DNA
<213> Homo sapiens

<400> 438
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ctaatcttca agaggaattt gaggttcact tgaataagtt agactagttt gaggtgggtg 120
tagctagagg attgaagtcg taccaaaaaa aaaatgtatg tatatgtata tgtcctcgag 180

<210> 439
<211> 211
<212> DNA
<213> Homo sapiens

<400> 439
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aaagcagtct ccctcttatt tgtaagttta catttttagc ggaaactact aaattatttt 120
gggtggttca gccaaacctc aaaacagtta atctccctgg tttaaaatca caccagtggc 180
tttgatgttg tttctgcccc gcaccctcga g 211

<210> 440
<211> 264
<212> DNA
<213> Homo sapiens

<400> 440
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ttctctgcat ttcttggtgc agccacgatg tatacaagat acaaaatagt acagaagcaa 120
aatcaaacct gctatttcag cactcctgtt tttaacttgg tgtctttagt gcttggattg 180
gtgggatgtt tcggaatggg cattgtcgcc aattttcagg agttagctgt gccagtggtt 240
catgacgggg gcgctcttct cgag 264

<210> 441
<211> 174
<212> DNA
<213> Homo sapiens

<400> 441
gaattcgcgg ccgcgtcgac agacctgcct cgagactacc aaagtgctgg aattacaggc 60
atgagctacc gcgcccagct gacttgtaca gcttctatgg tgtgctttac atttttcctg 120
cttttgagca tttctgagag gcctcgtgtt ttctttttctt taacaaacct cgag 174

<210> 442
<211> 166
<212> DNA
<213> Homo sapiens

<400> 442
gaattcgcgg ccgcgtcgac tgaggcccga ggttctggga aggtgtacag gcagttaagt 60

ttcggggatg aagtggactg gcatatctcc atatattcag ttatttatat gtaattttga 120
aaactttgtt caggaaccta tttgtattga aagaacaaaa ctcgag 166

<210> 443
<211> 153
<212> DNA
<213> Homo sapiens

<400> 443
gaattcgcgg ccgcgtcgac tctgctttta ctgcatctca caatttttga tatttttcag 60
ctcactcagt ttagtgtatt tttatttttc ttgagactct ctatgaaata cacatcattc 120
agatatatgt tgtttagtgt ccaagtactc gag 153

<210> 444
<211> 236
<212> DNA
<213> Homo sapiens

<400> 444
gaattcgcgg ccgcgtcgac cctttttcttt ctccttttat gctattattg tgatatatgc 60
ttaatcccct tatattataa agcaggttac acagtgttaa atcactcctt tacacaatct 120
tttttaaaaa taatttaaga gaagaaatga gaaacatact aataggtctt acatatacct 180
acatatttat tgtttctagc actctcctct tcttctatgg attcaggcgt ctcgag 236

<210> 445
<211> 125
<212> DNA
<213> Homo sapiens

<400> 445
gaattcgcgg ccgcgtcgac taatcttgtg aaattagcat tctagcaaga agacaggcaa 60
taaaccataa ccatatctaa gtaagttaat tatactatat gttagaaagt tctgagacgc 120
tcgag 125

<210> 446
<211> 346
<212> DNA
<213> Homo sapiens

<400> 446
gaattcgcgg ccgcgtcgac attttttta acctgccttt ttcatcaagt tctgttttct 60
actctttatt tcaactgtag tgagtgttag gtaaggctgt tgattggggt tcaaagctga 120
gaacttcagg cctcagttgg ttctagttcc agcattgctt ttcacttaac ttctctgagt 180
ttcatttcct tccatgataa tgagagaatt gggccctttg acactaaata acactgggtg 240
ggtggatctg aagacatttt atctgcttat tcttttcact cttatgtctc tgtcaaccgg 300
attgacagat tcctcatgtt ttcactctgg tccacaacca ctcgag 346

<210> 447
<211> 119
<212> DNA
<213> Homo sapiens

<400> 447
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gaagtattac ctacacaaag atgagagtca aagctgaaag aagggatacg catctcgag 119

<210> 448
<211> 140
<212> DNA
<213> Homo sapiens

<400> 448
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ttaaaattag attaaatttc cttagatcac ctctaaaaat taaaagaatg gtattagttc 120
caagtagttt gctcctcgag 140

<210> 449
<211> 190
<212> DNA
<213> Homo sapiens

<400> 449
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tcaaacttca ttttgtcgta ttctttttaa aatgtatttt ttgtttaaaa gcataagtgt 120
tttctactct ttatttgtga tggaaaaata tgagaatcca atagtcaacc aaggtaacgg 180
aacactcgag 190

<210> 450
<211> 260
<212> DNA
<213> Homo sapiens

<400> 450
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aggacacaag ttcacaagtg tggacaggaa cattaaactt tctgccagcc gaaatctgtc 120
aggagcttgg ttcagatttt ttttaactct aaaaagcgct ttggttcaaa gcagattcgt 180
taagagtgtg gggagttttt gttttgtttt attttaagct gcattaaact ccaatgtata 240
tgaaaggggc aatcctcgag 260

<210> 451
<211> 245
<212> DNA
<213> Homo sapiens

<400> 451
gaattcgcgg ccgcgtcgac attctgtttg tgtacatttc tctctagaag ttagtcagaa 60
cagtgtcttt aatttatgag gctttataat ctactttatt gatagactcc agagataggg 120
aaacatttca tactaacaca agagcaaagg tctttatgaa atatagacat acggtctcac 180
aagcatcaat atttttggtg gtgtttttag ttatactgtg tataataaac agagtgaatc 240
tcgag 245

<210> 452
<211> 155
<212> DNA
<213> Homo sapiens

<400> 452
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tcatcctctg ggtgtctgca tatgtggccc cttctcatgg cagcttttcc tggccagcct 120
atggaagtag gtccatcagg cacccctccc tcgag 155

<210> 453
<211> 217
<212> DNA
<213> Homo sapiens

<400> 453
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ttgggtgttc ctcattctac tgcttatgtt gactatgggc aggaatcttt acctcttaac 120
ttcatttttt acgtttattg aaatggtact ttctatttac ctacttatca gtactaggca 180
gattctgtat aactttcagt ttcaggatac tctcgag 217

<210> 454
<211> 249
<212> DNA
<213> Homo sapiens

<400> 454
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gttggatgtc ttttcccaat ggtgctgagt catcccagtc tctgtctttg gtactgctgg 120
ccctctggtg ccatagcaat ctgtttctgt tctcttttgc ttttgttggc acccagaaat 180
ctaacctgtg ctgtttccat tagtgctcca ggcaagacag aaacccatcc cttgggtggc 240
acgctcgag 249

<210> 455
<211> 226
<212> DNA
<213> Homo sapiens

<400> 455
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ggtgttacga aaggatctat cacaagctcc gttctcctgg ccggcgggcg cactggtagc 120
gcaggcttgt cacgcggcca ccgcggcctt gcacactcac cgcgaccacc cgcacacagc 180
cgcttacctc caagagctgg ggcgcatgcg caaagtggtc ctcgag 226

<210> 456
<211> 428
<212> DNA
<213> Homo sapiens

<400> 456
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ccagatctgt tctgcaacat tcaccgttct ctgcatccag ctctgcttat ctgctgttac 120
cttggacacc agagcagcta taggtatctg ccagagctat gaaatcattc agccggatcc 180
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cttctgaaaa ttccaaacga gatcgcctta acccagaatt tcctgggact ccttaccctg 360
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acctcgag 428

<210> 457
<211> 451
<212> DNA
<213> Homo sapiens

<400> 457
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gcaagccaga aacaccaatg gctgcggaca attattggat taaaaaaaaa aaagagtccc 120
aagtaaaggc tgctctctta ggacagcagg aacagggcag cctagcaaga cagaaaattt 180
ttagacaata accaacctag gccatgagaa aaacgggcct cattcccatc cggtcagcaa 240
atactgagtg gggaacctag actcccacct tcacctggtt ataacgaggc actcttcttg 300
actcctacta caagggcggt atcagagaag gtgagcgggg aatcctgccc tcctcctccc 360
ctccagctgt aatgtcatac agactacaca gggagcctgg actttcactc cacctagcag 420
taacaaggca cctctccccc atacactcga g 451

<210> 458
<211> 394
<212> DNA
<213> Homo sapiens

<400> 458
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caccctttcc agctacctct gctgcccctg agccccaccc ttccacctcc acagcccagc 120
cagtcactcc caagcccaca tctcaggcca ctaggagcag gacaaatagg tcctctgtca 180
agacccctga accagttgtc cccacagccc ctgagctcca gccttccacc tccacagacc 240
agcctgtcac ctctgagccc acatctcagg ttactagggg aagaaaaagt agatcctctg 300
tcaagacccc tgaaacagtt gtgcccacag cccttgagct ccagccttcc acctccaccg 360
accgacctgt cacctctgaa tccaccaact cgag 394

<210> 459
<211> 202
<212> DNA
<213> Homo sapiens

<400> 459
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tgggattatg tgtgtgagcc acagctcctg gcctcttttt ttgtttttcc tatcccaagt 120
tgtattacta gttttgggga gtttgcagac aattgaatat tctataggct gtgttgcagc 180
tttagatgga tcgtccctcg ag 202

<210> 460
<211> 126
<212> DNA
<213> Homo sapiens

<400> 460
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cttctctctt ttttctcatc cccacactca atgcaccctc aggtcctgtg cctccatctc 120
ctcgag 126

<210> 461
<211> 187
<212> DNA
<213> Homo sapiens

<400> 461
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aacatttgct ttgctttctg ctgaatccct aatctcaaca atctatacct ggactgtcca 120
gttctcctcc tgtgctatct tctcttctat ccaagtagaa tgtacgccag gagctccttc 180
cctcgag 187

<210> 462
<211> 193
<212> DNA
<213> Homo sapiens

<400> 462
gaattcgcgg ccgcgtcgac ccttattttc catgacagat cttaacgaca atatatgcaa 60
aagatatata aagatgataa ctaatatagt tatactgagc ctgatcattt gcatttcgtt 120
agctttctgg attatatcaa tgactgcaag cacctattat ggtaacttac gacctatttc 180
tccaaggctc gag 193

<210> 463
<211> 224
<212> DNA
<213> Homo sapiens

<400> 463
gaattcgcgg ccgcgtcgac gatatttaat actttctgat caaacaggtt caaagtaaaa 60
cgttaaattt cacatttctt ttaaagaact cttaaagtgt aacagttacg ccatacttca 120
taagtggtaa agaaaggtat aaaatttgga aacattttgt tgggcatagt agtgarrggg 180
tgaaaaggat aaattatatc aaaatgagaa tgtgcttgct cgag 224

<210> 464
<211> 151
<212> DNA
<213> Homo sapiens

<400> 464
gaattcgcgg ccgcgtcgac caaactcctg ttgctttcgt ctatatcagg tctcatttta 60
aaagaatatg aggctcattt tacctcttct tcctccactc ctagttttcc ttttatatt 120
tgacattggc agtagttcca gtacgctcga g 151

<210> 465
<211> 292
<212> DNA
<213> Homo sapiens

<400> 465
gaattcgcgg ccgcgtcgac aaatggtggt aactagaatg aacataaggt aatgctatag 60
agttattcag gaaaatagcc taattacatg actctcttct ttactagtaa ttcacatttg 120
tctggcactt tacaattcat tttgcaataa tgacacaaaa gcacagagag attaaggagc 180
tttcctgaag tcctcaaact tgattatcta ttttttctg ttctgcctac acaacttcta 240
ccccgttgcc accctcagct ccaccatttt gcaccatcaa tcctgcctcg ag 292

<210> 466
<211> 178
<212> DNA
<213> Homo sapiens

<400> 466
gaattcgcgg ccgcgtcgac agaagatttg taaaagaaat aggctttttt tttttttgg 60
ttaattcaaa cgaggggaaa attagatagc atttcccct aaagaaatgt taatgttcat 120
tttgtggctt tgttttcaag tttcaggagc catgtacatc tcagaagcgt tactcgag 178

<210> 467
<211> 144
<212> DNA
<213> Homo sapiens

<400> 467
gaattcgcgg ccgcgtcgac ttgggttttt gtttcttcat tttttatgct tttcttttctt 60
cttctttttc ttgtgtttct ctttaccttc agaggagcag ctccagttcc tctgaaggta 120
aagagaaaca caagaagtct cgag 144

<210> 468
<211> 171
<212> DNA
<213> Homo sapiens

<400> 468
gaattcgcgg ccgcgtcgac cttttttaa aaaaagtatt tcattgaagc aagcaaaatg 60
aaagcatttt tactgatttt taaaattggt gctttagata tatttgacta cactgtattg 120
aagcaaatag aggaggcaca actccagcac cctaatggaa ccactctcga g 171

<210> 469
<211> 254
<212> DNA
<213> Homo sapiens

<400> 469
gaattcgcgg ccgcgtcgac cagatgatga atttgagaac ccctgtaccc ttcgtcatac 60
catggaaaag gttgttcgct cagcagctac aagtggagct ggtagcacta cctctggtgt 120

tgtgtctggc agcctcggct ctcgggagat caactacatc cttcgtgtcc ttgggccagc 180
cgcatgccgc aatccagaca tattcacaga agtggccaac tgctgtatcc gcatcgccct 240
tcctgcccct cgag 254

<210> 470
<211> 181
<212> DNA
<213> Homo sapiens

<400> 470
gaattcgcgg ccgcgtcgac acatgtacct gtaccagcat gtcctggcca ctctacagtg 60
ccgagaccta ctaagagcca ctgtgtttcc tgagactgta ccatcccttg cactagagac 120
ttcaggaact acttctgagc tagaaggccg tgcccctgag ccattacccc cagtcctcga 180
g 181

<210> 471
<211> 242
<212> DNA
<213> Homo sapiens

<400> 471
gaattcgcgg ccgcgtcgac gaatcccatt caggtaatct tctgttggct ggctgtagaa 60
ctacggagaa catctggaga aacatgtcaa gggtgtgtgt gaaatcgttg agcctactcg 120
attttgtcgt gctgttgcgc ggttttcact tggcactgtc ctttaaactc cttctgtgcc 180
gtgactctgc agtgtctggc agcgtagtag actctactcc ctctatggac gtgatcctcg 240
ag 242

<210> 472
<211> 219
<212> DNA
<213> Homo sapiens

<400> 472
gaattcgcgg ccgcgtcgac gagcatcctg cgctactggg actggctgat cgcatacaac 60
gtttttgtga ttacgatgaa aaatatcctg tcaataggag catgtggata cattggaaca 120
ttggtgcaca atagttgttg gttgatccag gctttcagcc tggcctgcac agtcaaaggc 180
tatcaaatgc ctgctgctaa ttcaccctgt acactcgag 219

<210> 473
<211> 220
<212> DNA
<213> Homo sapiens

<400> 473
gaattcgcgg ccgcgtcgac agaacatcga ccgcttcatc cccatcacca agctcaagta 60
ttactttgct gtggacacca tgtatgtggg cagaaagctg ggcctgctgt tcttccccta 120
cctacaccag gactgggaag tgcagtacca acaggacacc ccggtggccc cccgctttga 180
cgtcaatgcc ccggacctct acattccagc aatactcgag 220

<210> 474
<211> 219
<212> DNA
<213> Homo sapiens

<400> 474
gaattcgcgg ccgcgtcgac cacgaactgc tttctgtaat tgcactgtgg ataaatgttc 60
cgagagtctc cattgttgta caggatcttc agttattcga ggggaatgag gcaggtcaag 120
ccgatgctag ccactagttt gatttttttt ctgttttata gtttgcgctg catggtactt 180
gtgaagctta aatattttga gtgttctact ggactcgag 219

<210> 475
<211> 144
<212> DNA
<213> Homo sapiens

<400> 475
gaattcgcgg ccgcgtcgac aaaaaaccct attttcacat acagtcacat tgggatttgg 60
agcttcaaca tatgaatttt cagggttatc attcagtcca aagtacttaa tatgattctt 120
ttccgtttcc acatagtact cgag 144

<210> 476
<211> 176
<212> DNA
<213> Homo sapiens

<400> 476
gaattcgcgg ccgcgtcgac aaaggttagt gcctttaaaa ctaacctgtg ttagagttac 60
atgaatctgg ctctaaagta tctattttgc atccatttat atatagatct taaacagaaa 120
tactctaggt tgccacacca cagttttaag aagttatgct gctgctgtta ctcgag 176

<210> 477
<211> 155
<212> DNA
<213> Homo sapiens

<400> 477
gaattcgcgg ccgcgtcgac agaagctcaa gaagcacact ggaggttacc ttgaggcgtt 60
tgtgtaatct gcatactagt ggagtagcca tggtgaccgt agccacatgg gtgttctgtt 120
gctgttttgc aggttcaaac cttgtactac tcgag 155

<210> 478
<211> 122
<212> DNA
<213> Homo sapiens

<400> 478
gaattcgcgg ccgcgtcgac atggagttgg tcttagccgc tgcaggagcc cttctttttct 60
gtggattcat catctatgac acacactcac tgatgcataa actgtcacct gaagctctcg 120
ag 122

<210> 479
<211> 158
<212> DNA
<213> Homo sapiens

<400> 479
gaattcgcgg ccgcgtcgac ccttgaacgc acctcaggat ggcccgtact ttggaaccac 60
tagcaaagaa gatctttaaa ggagttttgg tagccgaact tgtaggcgtt tttggagcat 120
attttttgtt tagcaagatg cacacaagcc acctcgag 158

<210> 480
<211> 109
<212> DNA
<213> Homo sapiens

<400> 480
gaattcgcgg ccgcgtcgac cggatcaagg tctttcattt cttgttcgct tactttcgtg 60
aaatcctcac atcgttttaa tggtactagt caagacaagt ttactcgag 109

<210> 481

<211> 182
<212> DNA
<213> Homo sapiens

<400> 481
gaattcgcgg ccgcgtcgac ctacatgcta ttatagctgg atttttggca ggtatatcaa 60
tgatgtttta taaaagcaca acaatttcca tgtatttagc gtccaaattg gtagagacaa 120
tgtatttcaa aggcattgaa gcagggaagg ttccctattt tcctcatgca gataacctcg 180
ag 182

<210> 482
<211> 144
<212> DNA
<213> Homo sapiens

<400> 482
gaattcgcgg ccgcgtcgac ataaatcttt cttttaata taaattggag gaaactaatg 60
aataaatcaa aggttcgagc tgtacatgca gttactgtga ttttagtgtg tgttataaaa 120
tgctgtgaag cacacactct cgag 144

<210> 483
<211> 194
<212> DNA
<213> Homo sapiens

<400> 483
gaattcgcgg ccgcgtcgac ccaattttaa gtccacactt cggactcatc agaaatttat 60
tttctgaaat gtacagccta atttattcta tgattttaat gtcttttcct ttaatctctt 120
cctctcagta tacttactct ttgacctcaa gaagcctcca attccttaac caaccttttc 180
cccctccccct cgag 194

<210> 484
<211> 194
<212> DNA
<213> Homo sapiens

<400> 484
gaattcgcgg ccgcgtcgac gtgggatata tcttttctgt tctatatttg gtagacaatc 60
ttcttaaccg catgaagtcc cgggcgaagt tgtcctcccc attgtggtca ggactcttca 120
tggcctggac cctctggatg aatttcctca ggatctccac ttgctccatc ctcccgcgtc 180
cccccaaact cgag 194

<210> 485
<211> 228
<212> DNA
<213> Homo sapiens

<400> 485
gaattcgcgg ccgcgtcgac gaggaactat ttaagttttt cagagattga aattatttgt 60
tttaaaaaga tcacattttt gtataaaaaa atcttgagag actaggaagc tatttgcaat 120
agttcatgta tgaaatttga atgccaaaaa ctaatttcct tagcattcac tttttatttt 180
atttttcttt atttttaat tttctgtaag ttactgggtt atctcgag 228

<210> 486
<211> 121
<212> DNA
<213> Homo sapiens

<400> 486
gaattcgcgg ccgcgtcgac tttcttaatt cagttgagtt tttttttttt ccaagtgttc 60

atcttgatcc actaaattta ttgcatgacc tatgaaatgg atcataaccc aaattctcga 120
g 121

<210> 487
<211> 217
<212> DNA
<213> Homo sapiens

<400> 487
gaattcgcgg ccgcgtcgac agacttaaag ttagagctgc gacgactacg agataaacat 60
ctcaaagaga ttcaggacct gcagagtcgc cagaagcatg aaattgaatc tttgtatacc 120
aaactgggca aggtgccccc tgctgttatt attcccccag ctgctcccct ttcagggaga 180
agacgacgac ccactaaaag caaaggcagc actcgag 217

<210> 488
<211> 204
<212> DNA
<213> Homo sapiens

<400> 488
gaattcgcgg ccgcgtcgac ctttgacata tttattactg caagtagaat ctcactaatg 60
acctattcct gtatggcctt atccaaatcg aaatcacaag aacagaagaa taatgaaaaa 120
acagacaaga gttcattaaa tctcccagaa gttgattcag atgttgctaa gcccaaccag 180
gcatgtattt ccatcggact cgag 204

<210> 489
<211> 288
<212> DNA
<213> Homo sapiens

<400> 489
gaattcgcgg ccgcgtcgac aggattaata aatcttttgg catggtcgat ttgtaataaa 60
ttactgaaaa tgtgggatta caatgaaact cttaaagtgt gccacataag tcaaggaagc 120
cacctaagtc atgggatggg catgagtgag acactctgga ataatcttga tgctactctg 180
ggactgccct tgcagggtgg gacatcagct tcactaaggg gctcaccaga gactccttca 240
agggagcatt tcttggtttc catattgtgt ttatgtcatt tactcgag 288

<210> 490
<211> 266
<212> DNA
<213> Homo sapiens

<400> 490
gaattcgcgg ccgcgtcgac ggggagcatc cagtctttaa gagccaagtg ggggcccctt 60
ttccgaagcc acttccaggc caaggcagtc gccagggctt cttgtcccca ccttctgaac 120
cttcttcaaa cagtagtaca agctcccctc agccagcctg cctgcccagc gaggccccca 180
ggttcaaggt gttggcgggg gcggagggca ggggaacggg atccttctcc cgctgcccac 240
caacaccaac actcacacac ctcgag 266

<210> 491
<211> 166
<212> DNA
<213> Homo sapiens

<400> 491
gaattcgcgg ccgcgtcgac atccctcttt ggatctctgt cttcccccaca gcatggctca 60
gtcatttatc attaacacat tagctctcag aagtttgctg ctatttgtcc accttttttt 120
ctttgttgtc agtgaggaag gctgttctga attgcatgat ctcgag 166

<210> 492

<211> 246
<212> DNA
<213> Homo sapiens

<400> 492
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tatatttgtg tcatgattat tttttgcttg tgtttgaaaa tatattaaag aaaattatat 120
tttacccta aattctttag tacagatttc taaaaaataa gaacattttc ctgtatagtt 180
acaaaatcac cttttcaaac aaaataaaaa atgtttttta tatcatttat tacccagtca 240
ctcgag 246

<210> 493
<211> 243
<212> DNA
<213> Homo sapiens

<400> 493
gaattcgcgg ccgcgtcgac acaaataatg ctactaggta gtgactaaat atagcaaaca 60
cttcatcaga tattagaatt aggtcacact attgaggtta taatctgaag gttgtgttac 120
atagaaacca ctttagatta ttatcaactt ggactaggct ttattttata atagcatagt 180
aagtaatatc tattgtgtca tttcttcaac cattttattc taagatccat gaggctactc 240
gag 243

<210> 494
<211> 207
<212> DNA
<213> Homo sapiens

<400> 494
gaattcgcgg ccgcgtcgac tacacattag tgcattgcgt atatcaactg gcccccaatg 60
aagcatttaa gtgcttggaa ttttactaaa ctgacttttt tgcaactttg ggagattttt 120
gaggggagtg ttgaaaattg ccaaacactc acctcttact caaaacttca aataaaatac 180
acattttcaa gagagagcac cctcgag 207

<210> 495
<211> 203
<212> DNA
<213> Homo sapiens

<400> 495
gaattcgcgg ccgcgtcgac agctattata taaatatata ttctggttat agttctaata 60
tggagatgtt gtgtgcaatg ctggcctgtg gtggtctgtg taatgcttta acttgtatgg 120
aggaggccag gctcagagct gagatgtggc ctgaaccttc cctgtatcga tcctttaatt 180
tagaactgtc aagatgtctc gag 203

<210> 496
<211> 172
<212> DNA
<213> Homo sapiens

<400> 496
gaattcgcgg ccgcgtcgac taatttttc taagtaagat acaaaaaatt ttcatctaaa 60
gtaatatttc actttatatt gtaaagaagg taggtatatt ggtggctgag gtctcttgaa 120
attgctaaag ggaaattttt ctatggtaat gctcttacgg ataattctcg ag 172

<210> 497
<211> 180
<212> DNA
<213> Homo sapiens

<400> 497
gaattcgcgg ccgcgtcgac gaggggaggt acagaaagag gagaggagag aaagagagag 60
agagaggaaa aaaagacagg aaagaaaaga aagaaaagga aagaggaaag gaaagggaag 120
ggaaaaggaa aggaagaaag aatgcaaaga ttgagaaaaa tgtgggcact gctgctcgag 180
<210> 498
<211> 182
<212> DNA
<213> Homo sapiens

<400> 498
gaattcgcgg ccgcgtcgac aatccttgag ccagggctgc catataacct gacaggaaca 60
tgctactgaa gtttatttta ccattgactg ctgccctcaa tctagaacgc tacacaagaa 120
atatttgttt tactcagcag gtgtgcctta acctccctat tcagaaagct ccacatctcg 180
ag 182

<210> 499
<211> 174
<212> DNA
<213> Homo sapiens

<400> 499
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attcttcttt cctccctccc tttcctggta gcctcctttc ctccccttct gccttcccct 120
tccttctttc cttattcttt tttattttgt ttaaatagta ccacagatct cgag 174

<210> 500
<211> 171
<212> DNA
<213> Homo sapiens

<400> 500
gaattcgcgg ccgcgtcgac attttgaagc gtctttttc tttcttttt ctttttttgt 60
tttgtttttt gttattgata ttaaacagtg taatctttgc aagcgtatat tgaagattat 120
tctggagcat ttattgcctt accagaaatg ttagtaggaa atgttctcga g 171

<210> 501
<211> 169
<212> DNA
<213> Homo sapiens

<400> 501
gaattcgcgg ccgcgtcgac atccgagaaa gggacgctta taagaatatt tgatacttca 60
tcagggcatt taatccagga actgcgaaga ggatctcaag cagccaatat ttactgcatc 120
aacttcaatc aggatgcggt tgcaattctt gttcccgacc tgcctcgag 169

<210> 502
<211> 332
<212> DNA
<213> Homo sapiens

<400> 502
gaattcgcgg ccgcgtcgac atcagaagag tatccatcac ccgcagcaac cgctcaggga 60
acaccatcaa aaaagaaaaa aagggaatat ctggatttcc tgggcgagga ggagcgagtc 120
tgctcgggag ctgttccagc aggcgatttt taaatactgc tttctacgcc ctatacaact 180
tggcttcaca tactttttaca ctaactttat atgattttta aaaactggtc tgatcggact 240
tctcgtcctg ggacactgtt tactggagtc tggccggctc tccgtgctcc tcttggtacc 300
tcattttggg gagaacctta aacccactcg ag 332

<210> 503
<211> 234

<212> DNA
<213> Homo sapiens

<400> 503
gaattcgcgg ccgcgtcgac attcaatttg cattgtaatt cagccactgc caggatgaga 60
tcctacttct ggttttcagc catctcagct ctgcatctat gggacataag ggcagacata 120
gaaacttttg attcattcat gtggtgcttg agctgggaat ttgaatccct gaattcattc 180
ttcttttttc ccccactttg tctagtacaa ttaggagcaa caaccactct cgag 234

<210> 504
<211> 147
<212> DNA
<213> Homo sapiens

<400> 504
gaattcgcgg ccgcgtcgac aggacttatg atccaattca ccaaaagatt aaatgaaacc 60
accctgtgtt ttaaaatata tataatgttc aacctaatgt atatgcaaca tttattctat 120
tctaattatt tgacagggaa actcgag 147

<210> 505
<211> 311
<212> DNA
<213> Homo sapiens

<400> 505
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aaggggagaa atgtacttgg aaattaatgt atgtttacat ctctttgcaa attcctgtac 120
atagagatat attttttaag tgtgaatgta acaacatact gtgaattcca tcttggttac 180
aaatgagact ccttcagtca gttatccaaa taaaagcagt tctgaaacta tccctttctt 240
tgttatgggt ggaaggtggg gctccaggcc ttcgcagtct gtggcttata aaatgtgcag 300
aggccctcga g 311

<210> 506
<211> 207
<212> DNA
<213> Homo sapiens

<400> 506
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ccatctctac ctttaacatc acccagaccc ccgcccctgc ccgtgcccca cgctgctgct 120
aacgacagta tgatgcttac tctgctactc ggaaactatt tttatgtaat taatgtatgc 180
tttcttgttt ataaatgcca cctcgag 207

<210> 507
<211> 374
<212> DNA
<213> Homo sapiens

<400> 507
gaattcgcgg ccgcgtcgac gtactctaaa gttagaatct cctgatcttt cacgagatgc 60
tggactggag attggcaagt gcacatttca tcctggctgt gacactgaca ctgtggagct 120
caggaaaagt cctctcagta gatgtaacaa caacagaggc ctttgattct ggagtcatag 180
atgtgcagtc aacacccaca gtcagggaag agaaatcagc cactgacctg acagcaaaac 240
tcttgcttct tgatgaattg gtgtccctag aaaatgatgt gattgagaca aagaagaaaa 300
ggagtttctc tggttttggg tctccccttg acagactctc agctggctct gtagatcaca 360
aaggtccgct cgag 374

<210> 508
<211> 195
<212> DNA

<213> Homo sapiens

<400> 508
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ctgctctttc attgcattac cacttccacc cctgcaaact gattcatcat gatctccagt 120
cccttgatca ctactttctc tctagttttg ggctccctca acctcacttc ctacctgatg 180
gggcctaaac tcgag 195

<210> 509
<211> 181
<212> DNA
<213> Homo sapiens

<400> 509
gaattcgcgg ccgcgtcgac caaagtcaag cctccgaagt acctgttgga tagctgtgcc 60
cctctgctcc gatacctgtc ccactcagaa tttaaggatc tgatactgcc caccatacag 120
aagtccttac tgaggagtcc agagaatgtt attgaaacta tttctagtct gcgggctcga 180
g 181

<210> 510
<211> 160
<212> DNA
<213> Homo sapiens

<400> 510
gaattcgcgg ccgcgtcgac taagattaaa gattcttagt gagatcatct tgccaatttg 60
ttgtacatct ctcattcatt gttgggggaa aaaaaagcac aactatacct ctttaatgtt 120
attttcttcc attatccctc tgactcgggt tctccctata 160

<210> 511
<211> 214
<212> DNA
<213> Homo sapiens

<400> 511
gaattcgcgg ccgcgtcgac cgagttattt ttattagcct tttttgaatt gaatatctct 60
ggtattttct aaactagaat tgcacttaat tctaatatat aaatttattt attgaattgg 120
taaaaagaga ttggcccctg ttctagcttt gtgactgttg tgctctcata aaaagtctac 180
tatatttatg attgttaggc gctatctgct cgag 214

<210> 512
<211> 209
<212> DNA
<213> Homo sapiens

<400> 512
gaattcgcgg ccgcgtcgac gggggttcta gaacatgtgt gaataagtcc ttgtttratt 60
ctcagcctct atgagggaaa tgaatgccca gagaccagag ccccattctg cagctcctcc 120
ctgtttaggc tgtggaaaac tggcctccaa actctgcagt gacaacacaa gatggccgtg 180
aagcaagcct ggcaccagag ggtctcgag 209

<210> 513
<211> 143
<212> DNA
<213> Homo sapiens

<400> 513
gaattcgcgg ccgcgtcgac ctcgagtttc aaaacataat agtatacaaa atataaaata 60
tcttaaatat ttataaaaat cacaagaaaa aaatagaacg tatgaaaata ttttatctg 120
agttctcccc cattattctc gag 143

<210> 514
<211> 130
<212> DNA
<213> Homo sapiens

<400> 514
gaattcgcgg ccgcgtcgac gtcatctttt gtcagtaaag ttttgtaact tcctcacaaa 60
gttctcgtgc ttcttataaa taatgtattt tacatcttac acttctattg ctattataca 120
ttgcctcgag 130

<210> 515
<211> 223
<212> DNA
<213> Homo sapiens

<400> 515
gaattcgcgg ccgcgtcgac gctctgaata gttaaaaatt aaatatttat tttcttcccc 60
aagctttagg taaggagaag aggggtcaag agttaaactt agagacccct tgtctctgag 120
aagcatcctt ctaagacatt ctgttggagt tccctcagta ctattcctta caactggagt 180
gggtagaagc cttatgaaaa ttatactgag aacctgcctc gag 223

<210> 516
<211> 185
<212> DNA
<213> Homo sapiens

<400> 516
gaattcgcgg ccgcgtcgac tttaaaagag tgtaatggaa gatgagaggg attctatttt 60
ggaccacatg ttggtgtgga ggagtgtcat tgacagtaag caccccaggc gtgtgtctgg 120
gagagcattg ggtatcgctc acttctgcag gtacttgttt ttttttctca tggccgaaac 180
tcgag 185

<210> 517
<211> 156
<212> DNA
<213> Homo sapiens

<400> 517
gaattcgcgg ccgcgtcgac gcccccagtg tcctttctgc tgcaggtgcg tttttgctgt 60
tcacaaatgc ttctgctgtg cctttctttgg tgtgttctgc ctcttctcct gagactgctg 120
ttcctttcaag ttcagggtga gtctgatctc ctcgag 156

<210> 518
<211> 213
<212> DNA
<213> Homo sapiens

<400> 518
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cgcctttcgga tgaactcagc tgctcttcca ttgtcaatag caatgcttgc ttttatcact 120
ctaccaaata actgtttgtt gtttattgcc ctggtacagt tttgtgcaga gtctttatcc 180
aaaaataaaa taaatgcaac cccttactc gag 213

<210> 519
<211> 196
<212> DNA
<213> Homo sapiens

<400> 519
gaattcgcgg ccgcgtcgac tcgggaagct ataaaaattg taaaaggtct attagtaata 60

ttacacagga tactttaagg cagccctgca gagtagcatg catctagctc ccagagtttc 120
tttatgcatt aatattgcac atgttctcct tacccatgtg ggcaaggcag cccaccagcc 180
cctcataacc ctcgag 196

<210> 520
<211> 238
<212> DNA
<213> Homo sapiens

<400> 520
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cgacaactgt gtggaacgat ttgaccatca ctgcccctgg gtgggcaact gtgtggggag 120
acggaactat cgcttcttct acgcgtttat tctctccctc tcattcctga cggccttcat 180
cttcgcctgt gtggtcaccc acctgacgtt gcgcgctcag ggaagcaact tcctcgag 238

<210> 521
<211> 197
<212> DNA
<213> Homo sapiens

<400> 521
gaattcgcgg ccgcgtcgac gtgagagctc agagctacag agcctttcag atgaatttga 60
aaacagactc tgtgtgtgtg tgcatgtgtg catgtgtggc atatgtgccg tatgtcagta 120
gcttgacagt tttcaaatcg tgcctatatt tttttgcata cacaaatttt tgtgtttgca 180
aactcagaat cctcgag 197

<210> 522
<211> 270
<212> DNA
<213> Homo sapiens

<400> 522
gaattcgcgg ccgcgtcgac aaacttcaac acaatgaggt gttgccacat ctgcaaactt 60
cctgggagag taatggggat tcgagtgctt cgattatctt tggtggtcat cctcgtatta 120
ttactggtag ctggtgcttt gactgcctta cttcccagtg ttaaagaaga caagatgctc 180
atgttgcgta gggaaataaa atcccagggc aagtccacca tggactcctt tactctcata 240
atgcagacgt acaacagaac agatctcgag 270

<210> 523
<211> 208
<212> DNA
<213> Homo sapiens

<400> 523
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tgtgcatcct tactcactga tgatgccgct gaacttctgc ctcttttatg ctgttacctc 120
ctccttccct ctccttcacc ttagccctcc tagacctgac atcacttaca gcgggactaa 180
ggtgcaggga acacggccca tgctcgag 208

<210> 524
<211> 230
<212> DNA
<213> Homo sapiens

<400> 524
gaattcgcgg ccgcgtcgac attttaagga agctacttga attgctcatt ctgtgacttt 60
atttgtgtcc taaacattct tcagtgaaaa taattttatt tcagtcaaac atttatgagg 120
aaatgagatc acatctttgt cactggatgc tactttgaaga gggagtactt tgtaaccact 180
ttgatatgct gttatcacca ccccctgccc tccgcaaggt tctccctata 230

<210> 525
<211> 641
<212> DNA
<213> Homo sapiens

<400> 525
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aagtttcggg atgagcccag gccccgcttt ggtcttctcc gtggccgaga gttttacatg 120
aaggatatgt acacctttga ctcctcccca gaggctgccc agcagaccta cagcctggtg 180
tgtgatgcct actgcagcct gttcaacaag ctagggctgc catttgtcaa ggtccaggcc 240
gatgtgggca ccatcggggg cacagtgtct catgagttcc agctcccagt ggatattgga 300
gaggaccggc ttgccatctg tccccgctgc agcttctcag ccaacatgga gacactagac 360
ttgtcacaaa tgaactgccc tgcttgccag ggcccattga ctaaaaccaa aggcattgag 420
gtggggcaca catttacct gggtaccaag tactcatcca ttttcaatgc ccagtttacc 480
aatgtctgtg gcaaaccaac cctggctgaa atggggtgct atggcttggg tgtgacacgg 540
atcttggctg ctgccattga agtcctctct acagaagact gtgtccgctg gcccagccta 600
ctggcccctt accaagcctg cctcatcccc cctaactcga g 641

<210> 526
<211> 264
<212> DNA
<213> Homo sapiens

<400> 526
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acaatggaat ctacgttgac tttagcaacg gaacaacctg ttaagaagaa cactcttaag 120
aaatataaaa tagcttgcat tgttcttctt gctttgctgg tgatcatgtc acttggatta 180
ggcctggggc ttggactcag gaaactggaa aagcaaggca gctgcaggaa gaagtgcttt 240
gatgcatcat ttagagaact cgag 264

<210> 527
<211> 244
<212> DNA
<213> Homo sapiens

<400> 527
gaattcgcgg ccgcgtcgac ggcatttgtg tcgaacacga gtagcagtgg tggaaagtgt 60
aattggagga agattaagac tagtgtatga agaaagcgaa gatagaacag atgacttctg 120
gtgccatatg cacagcccat taatacatca tattggttgg tctcgaagca taggtcatcg 180
attcaaaaga tctgatatta caaagaaaca ggatggacat tttgatacac caccaacgct 240
cgag 244

<210> 528
<211> 273
<212> DNA
<213> Homo sapiens

<400> 528
gaattcgcgg ccgcgtcgac ccttttggt gaattgagtg ctgtttttgc tttttctcaga 60
ttccaaatga gagtatacat ttttcttttgt ttgatgtgct gggtgagatc tggtcttgac 120
cctgctgggc caaggttctc cagaaaacca ccatatagca gattagatta cacggatgca 180
aagtttgtgg atgtcatcca ttctgacttc aatgcctatt attttgttct cagtataatt 240
gttccagata aaactatgat gggtgaactc gag 273

<210> 529
<211> 412
<212> DNA
<213> Homo sapiens

<400> 529

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accgtataaa acctgagctc tttagttatt ttggaaaatg aaagcacgtt cattgtcgtt 120
ctgttgggtt tccaacagaa cttggttctt gtggttactc aatatttcat tgtgtttagg 180
ccctgtggat ggagagttac caccaagagc tagaaatcag gccaataacc caccagccaa 240
tgctctccga ggaggagcca gccaccctgg aaggcatcct agggccaaca accatcctgc 300
tgcttactgg cagagggaag agagatttag ggccatgggc aggaacccac atcaaggaag 360
gaggaaccag gaggggcatg ccagcgacga agctagagac caagaactcg ag 412

<210> 530
<211> 110
<212> DNA
<213> Homo sapiens

<400> 530
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ttttagtctt gtttactttc tcttcattgt taagagtatg caaactcgag 110

<210> 531
<211> 257
<212> DNA
<213> Homo sapiens

<400> 531
gaattcgcgg ccgcgtcgac agacaacatc accctagccc aagacatcgc tattagagat 60
acatcacctg gacactaaag cctccacccc agtgacactc tcaaggtgct gacaaaatgg 120
acatggacat ttgttgcttt tcttctttg aattaggaac tctattgtgt ttcctgaatt 180
tactgtctgc ttggcccatg atcctggtat gttccttgct ctctgccaaa acatgcaccg 240
tcccccccac actcgag 257

<210> 532
<211> 195
<212> DNA
<213> Homo sapiens

<400> 532
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ccagtagttt tcatgggctg cctaagaata ctgaacatac tgacttgtgg agtcattggc 120
tcctattcgg tggttttagc cattgacagt tactggtcca caagcctttc ctacatcact 180
tcgaacgtac tcgag 195

<210> 533
<211> 197
<212> DNA
<213> Homo sapiens

<400> 533
gaattcgcgg ccgcgtcgac gttttattta tttgcttttt tttctggctcc tgagtggcaa 60
acaaaggaat tttttatgct ggagatactt tgtattattg atttaagttt aatatcttga 120
cctgtttgat ctgagagtct gttatagata tgtatctatt ttccttcctt ccttccttcc 180
cctccttctt tctcgag 197

<210> 534
<211> 225
<212> DNA
<213> Homo sapiens

<400> 534
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ctcaatctcc aagtacagtc tcattctgag gtcccagggg tttctcaacg taagaattta 120
gggggacaga attcagcccg tagcagctgg gcagcaggac tcatgggtcc cagttctcag 180

gccccaagga ctcagagcag caaaggatac gtgacagatc tcgag 225

<210> 535
<211> 177
<212> DNA
<213> Homo sapiens

<400> 535
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ttcttatttc acttggctgt catggatctc atttcttctt tctgtctcat cctctactat 120
tcacccctct ccatagaccc atccctccct tggctattgg aacaactcaa gctcgag 177

<210> 536
<211> 403
<212> DNA
<213> Homo sapiens

<400> 536
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acaatggcca agaacaaatt aagagggccg aagtccagga atgtatttca catagccagc 120
caaaaaaact ttaaggctaa aaacaaagca aaaccagtta ccactaatct taagaagata 180
aacattatga atgaggaaaa agttaacaga gtaaataaag cttttgtaaa tgtacaaaag 240
gaacttgcac atttcgcaaa aagcatttca cttgaacctc tgcagaaaga actgattcct 300
cagcagcgtc atgaaagcaa accagttaat gttgatgaag ctacaagatt aatggctctg 360
ttgtaatata ctggtgatgc atctaattct ccacacactc gag 403

<210> 537
<211> 247
<212> DNA
<213> Homo sapiens

<400> 537
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gtctgatctt gaactttcta aggaaattca agacagtcta tcagaagtaa agtggaatat 120
gtttggcctt gaatttttc tagtgttaga agccctttg ttcctttca catgttatca 180
agtggttaag gcagggcgga ttctagatga aattcaggac aatctatcag aagtaaaggc 240
actcgag 247

<210> 538
<211> 396
<212> DNA
<213> Homo sapiens

<400> 538
gaattcagcc aaagaggcct aaaaaaggag aagaaagaaa agaaacctgc tgttggcgta 60
tttgggatgt ttcgctatgc agattggctg gacaagctgt gcatgattct gggaactctc 120
gctgctatta tccatggaac attacttccc ctcttgatgc tggtgtttgg aaacatgaca 180
gatagtttta caaaagcaga agccagtatt ctgccaagca ttactaatca aagtggaccc 240
aacagtactc tgatcatcag caacagcagt ctggaggaag agatggccat atacgcctac 300
tattacaccg ggattggtgc tggtgtgctc atagttgcct acatccaggt ttcactttgg 360
tgcctggcag ctggaagaca gatacacagg ctcgag 396

<210> 539
<211> 342
<212> DNA
<213> Homo sapiens

<400> 539
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tcagcgttaa tcagcccctc aaagggagag aaaagctggg cttttccctt gctgtacctc 120

attcagcttt tgatttccat ggccccacca tttatgtgca agatttgcaa tggttgtcag 180
cttcctctga agaccgagct tgacgcctcc atgccagctg ccgttggaac gcaaagccaa 240
gcaagggtca ggagggaagc tggcccggct gactggagaa tgggaacccc aggactctcc 300
actcatctcg aagggttgtg gtcccccag gaaagtctcg ag 342
<210> 540
<211> 249
<212> DNA
<213> Homo sapiens

<400> 540
gaattcggcc aaagaggcct atggtagctg ttcggtagat gctctttgct atttataagt 60
gactttaaac cttctcttgg ctgttaagaa atgtgttcta gatttagcta tttattgttt 120
gcggcctgca tgctgaaaca gtgcttacgt tgtctccatg tgtacggggc ctgtgtggat 180
ggtcgtatgt tttgcacatt ttgtagttgt tggtgtgctt cgccgcacac aaaaaaagag 240
tacctcgag 249

<210> 541
<211> 230
<212> DNA
<213> Homo sapiens

<400> 541
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aacagaagct gcagcacttc agtgctgtct tcctgctcat cctctgcttg ggaatgatgt 120
cagctgctcc accccctgat ccaagtttgg ataatgagtg gaaagaatgg aagacgaaat 180
ttgcaaaagc ctacaatctg aatgaagaaa gacacaggag acatctcgag 230

<210> 542
<211> 365
<212> DNA
<213> Homo sapiens

<400> 542
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acttcaaaga ggagattggc attgctaagc tcatcccgct cgtgaccacc tacatcatcc 120
tgtttgccta catctacttc tccacacgca agatcgacat ggtcaagtcc aagtggggcc 180
tcgccctggc agccgtggtc acagtactta gctcactgct catgtctgtg ggctctgca 240
ccctcttcgg cctgacgccc acactcaatg gcggtgagat cttcccatac ctggtggtcg 300
ttattgggct agagaacgtg ttggtgctca ccaagtcagt ggtatcaact ccagtggacc 360
tcgag 365

<210> 543
<211> 366
<212> DNA
<213> Homo sapiens

<400> 543
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cgaggactgt tcctgatcct gacaatgctg aacttgtctc aggttcctag tataatgggt 120
gagcagagat gggctattct ctcaactttc cctaaaccaa tgccagttcg ccatgatgct 180
atagtttttc caaaattcgt tactactgat aaaacagtgg atttgccata tttaccctat 240
gatcccaccc gagcaccatt aggagaaaat cgctctttac tagaacaggg ttctttatgt 300
tttcaaatta atggaccagg aaattgtatc aacctcacag cccgagcttt ggggtgagt 360
ctcgag 366

<210> 544
<211> 365
<212> DNA
<213> Homo sapiens

<400> 544
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ttttttcctt tcttgtagca tctgcatctc taatggatac tgaggggttt ggtgagctcc 120
ttcagcaagc tgaacagctt gctgctgaga ctgaaggcat ctctgagctt ccacatgtag 180
aacgaaattt acaggagatc cagcaagctg gtgagcgcct gcgttcccgt accctcacac 240
gcacatccca ggagacagca gatgtcaagg catcagttct tctcgggtca aggggacttg 300
acatatccca tatctcccag agactggaga gtctgagcgc agccaccact tttgaacctc 360
tcgag 365

<210> 545
<211> 475
<212> DNA
<213> Homo sapiens

<400> 545
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gctgtgtaca ctgctggcgg cggcggtccc cactgctcct gctccttccc cgacggtcac 120
ttggactccg gcggagccgg gcccagctct caactaccct caggaggaag ctacgctcaa 180
tgagatgttt cgagaggtgg aggagctgat ggaagacact cagcacaaac tgcgcagtgc 240
cgtggaggag atggaggcgg aagaagcagc tgctaaaacg tcctctgagg tgaacctggc 300
aagcttacct cccaactatc acaatgagac cagcacggag accagggtgg gaaataacac 360
agtccatgtg caccaggaag ttcacaagat aaccaacaac cagagtggac aggtggtctt 420
ttctgagaca gtcattacat ctgtagggga tgaagaaggc aagaggaacc tcgag 475

<210> 546
<211> 436
<212> DNA
<213> Homo sapiens

<400> 546
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caccatgact ggcctgaggg cccctctcc agctccctcc accggcccgg aactccggcg 120
gggctctggt cccgaaattt tcaccttcga ccctctcccg gagcgggccg tggtgtccac 180
cgcgcgtttg aacacttctc gcgggcaccg aaaacgcagc cgaagggtgc tctacccccg 240
agtggtccgg cgccagctac caaccgagga acccaacatt gccaagaggg tcctctttct 300
cctgttcgcc atcatcttct gccagatttt gatggctgaa gagggtgtgt cgcagcccct 360
ggctccggag gatgctacca gcgccgtgac acctgagccc atttctgcgc ccattactgc 420
gccccggtc ctcgag 436

<210> 547
<211> 393
<212> DNA
<213> Homo sapiens

<400> 547
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gctctgtcga agactttgga tgtgtcgtgc attctcttgc actttctcca gcagctggcg 120
cacctgccgg cagtagttag ccactttgca ctcccggaga aaagatttca gctgtagaac 180
agtaggcaac accaactctg ggaaagcgat ggtgtgggcc tggctgcgca ggtattccag 240
agtaaggtca cacagctgtt ccagcagccc gtcccggtac gcctttctcct gcaggttggt 300
gctggacagc ttcaagatca cagagaagtt gatgggcttg gagctcatgc gacctggccg 360
cctattgaag tccacctgct ggaaaatctc gag 393

<210> 548
<211> 447
<212> DNA
<213> Homo sapiens

<400> 548
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agatgtatta tgacaaataa ctcagcaggg atgtgaacaa aagtttccgg gattgtgtgt 120
tatttccatt cagtatgtta aatttactag ggcagctaat ctgtcaaaaa gtctttttca 180
gtatatgtta cagaattgga tgactgaatt tgaacagacc cttcgaggct tgccatcatt 240
caggtcaact ccacgcgctt ggacctgtcc ctgaccaaag gattacccaa ttggatctcc 300
tcagcatttt ctttctttaa aaaatgggtg ggattaatat tatttggaga tacactttgc 360
tgtggattag tgttgcttct ttgattggtc tgtaagctta aggcctaaac taggagagac 420
aaggtggtta ttgcacaggc actcgag 447

<210> 549
<211> 313
<212> DNA
<213> Homo sapiens

<220>
<221> unsure
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<400> 549
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tgcctttctg gtgggaggct tgatcgctcc agcacccaca acagcagtac cctacacggc 180
aataaaatgt gtggatgtcc gtaagaacca ccataaaacn agatggctgg cgccttgggg 240
acctaacaag tgtgacaaga tccgtgacat cgaggaagca attccaaggg aaattgaagc 300
aaatgagctc gag 313

<210> 550
<211> 392
<212> DNA
<213> Homo sapiens

<400> 550
gaattcagcc aaagaggcct agaggaaatc tttaagacat ggctggagct aaggcgtacc 60
gacttggagc agttctgctt cttatccact taattttcct catctctgga gccgaagcag 120
cttccttcca gcgaaaccag ctgcttcaga aagaaccaga cctcagattg gagaatgtcc 180
aaaagtttcc tagtccagaa atgatcaggg ctttggagta catagaaaag ctcaggcagc 240
aagctcacag agaagaaagc agcccagact acaatcccta ccaaggcgtc tctgttcctc 300
ttcaactcaa agaaaacgga gaagaaagcc acttggcagg gagctcaagg gatgcactga 360
gtgaagacga gtggatgcgg ataatactcg ag 392

<210> 551
<211> 419
<212> DNA
<213> Homo sapiens

<400> 551
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tctagcatac gtggaggttc tttttcactt tcttgaccct catgtctgct tctcttgagt 180
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accattgcag gactgaaatc cccagactac cgatacctcg gtggtcggtt ctcagcttca 300
ctaagaaagc agaacggctg cttatgctga agcctctgtg acagtcaagg gggtcatcac 360
ctacattatt gctgccaggg gtcacagccc tgacctttgc cttccagact ttctcgag 419

<210> 552
<211> 223
<212> DNA
<213> Homo sapiens

<400> 552
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aatgttaggg aaattgagag tgaaggacgg ttcctggcag gtcagggggt ttatttttat 120
ttttatctat ttttttttat tgtttctcct tagctgctgt ctgttcagtt ttgagactct 180
tcagtttcta gctttatatt catacaaagg cgttgcgctc gag 223

<210> 553
<211> 289
<212> DNA
<213> Homo sapiens

<400> 553
gaattcggcc aacatgacga agttaacaca gtggctttgg ggactggctc tcctgggctc 60
tgcctgggct gccctgacca tgggagcact gggcttggag ttgcctttcc cctgccgaga 120
ggtcctgtgg ccactgcctg cctacctgtt ggtctccgct ggctgctatg ccctgggcac 180
ggtgggctat cgcgtagcta cattccacga ctgcgaggac gctgcccgag agctgcagag 240
ccagatcgtg gaggcccgag ctgatttagc acgcaggggc attctcgag 289

<210> 554
<211> 331
<212> DNA
<213> Homo sapiens

<400> 554
gaattcggcc aaagaggcct agtttctcg ctatattcca ggtcctacag tgtgtttttc 60
tcagtttgga agtttttcag tgtttctcat catattccag gacatacatt tttcaagtca 120
atttttccac gttattcagt tttctccaca cattccaggt catagagtgt ttgtgtctct 180
tttccatgtt tttcagtttc ctcccataat ccaggtacta cagtgtgttt tttttcattt 240
atctcgttat ataccatttt ttaccatatt ccaggtccta ctcttgtgtt tctcatttc 300
catgatttta cattttcatg ccttactcga g 331

<210> 555
<211> 391
<212> DNA
<213> Homo sapiens

<400> 555
gaattctgcc aaagaggcct accagcaccc ggtgccaggg gccatggagc cccgggcagt 60
tgcggatgcc ttggagaccg gagaggaaga tgcggtgaca gaagctctgc ggtcgttcaa 120
ccgggagcat tctcagagct tcaccttcga tgatgcccag caggaggaca ggaagagact 180
cgcaaagcta ctggtctccg tcctggagca gggcttgtca ccaaagcacc gtgtcacctg 240
gctgcagact atccgaatcc tatcccgaga ccgcagctgc ctggactcat ttgccagccg 300
ccagagctta catgcactag cctgctatgc tgacattacc gtctcagagg aacccatccc 360
acagtcccca gacatggatg tcctcctcga g 391

<210> 556
<211> 480
<212> DNA
<213> Homo sapiens

<400> 556
gaattcggcc aaagaggcct aagacgatca gataccgtcg tagttccgac cataaacgat 60
gccgactggc gatggtggca aaggcaattg aggaggattc tgaatgatgc ggcccatttc 120
tacacctcca aaaatcacct gtccaggatt ggagtaccga ctggagactg ggtactgggt 180
agcagcatca cctgcatgct ctgctgaccc tacagctgtt gtctgattgg ttaagacatc 240
caactgcaca ttttgattgg ccagcaggga ctgcaccagc cctatgctct gggtgggaga 300
cagagcttga gcagagctgt ggattggtgc aatagggatg ttcactgtac agggcgggtt 360
gttttcaggg acacctgatg ctcctgtaac tggtaagtca tcctcatctt cactgaaaac 420
gtttgggttg aagacaggca ggttaatata gtccatggaa atcttcctaa cttcctcgag 480

<210> 557
<211> 406

<212> DNA
<213> Homo sapiens

<400> 557
gaattcggcc aaagaggcct agatgaagaa agcacacgtg tttgggatca cgttctcctt 60
cacccaggcc atgatgtatt ttttttatgc tgcttgtttc cggttcggtg cctacttggt 120
ggcacaacaa ctcatgactt ttgaaaatgt tatgttggta ttttctgctg ttgtctttgg 180
tgccatggca gctgggaata ctagttcatt tgctcctgac tatgcgaaag ccaaagtatc 240
agcatctcat atcatcagga tcattgagaa aacccctgag attgacagct acagcacaga 300
gggcttgaag cctactctgt tagaaggaaa tgtaaaattt aatgaagtcc agtttaacta 360
tcccacccga cccaacatcc cagtgcttca ggggctgagc ctcgag 406

<210> 558
<211> 337
<212> DNA
<213> Homo sapiens

<400> 558
gaattcggcc aaagaggcct atctgaatat gcgttgtttg gcagctcggg tcaactataa 60
gactttgatt atcatctgtg cgctattcac tttggtcaca gtacttttgt ggaataagtg 120
ttccagcgac aaagcaatcc agtttcctcg gcacttgagt agtggattca gagtggatgg 180
attagaaaaa agatcagcag catctgaaag taaccactat gccaaccaca tagccaaaca 240
gcagtcagaa gaggcatttc ctcaggaaca acagaaggca ccccctgttg ttgggggctt 300
caatagcaac gggggaagca aggtgtttgg gctcgag 337

<210> 559
<211> 374
<212> DNA
<213> Homo sapiens

<400> 559
gaattcggcc aaagaggcct acctcaacgc caccaccgcc tcctcactcc atggccatga 60
gagccgcctg cctcttcctg ctgttcatgc ctggcctgct ggctcagggc caatatgacc 120
tggatcctct ccccccattc ccggaccatg tccagtacaa ccactatggc gaccagattg 180
acaacgcaga ctactatgac taccaagaag tgagtcctcg gacccctgaa gagcagttcc 240
agtcccagca gcaagttcaa caggaagtca tcccagcccc taccccagag ccagcagctg 300
caggggacct ggagactgag cctacccgagc ctggccctct tgactgccgc gaagaacagt 360
acccattact cgag 374

<210> 560
<211> 285
<212> DNA
<213> Homo sapiens

<400> 560
gaattcggcc aaagaggcct agccgctgcc gtcgccatga cccgcggtaa ccagcgagag 60
ctcgcccgcc agaagaacat gaagaggcag agcgactcgg ttaaggaaag cgccgagatg 120
atgggctttc tgctgccgcc cgcaagcaga gggactcgga gatcatgcag cagaagcaga 180
aaaaggcaaa cgagaagaag gaggaaccca agtagccttg tggcttcgtg tccaaccctc 240
ttgccctccg cctgtgtgcc tggagccagt cccaccatgc tcgag 285

<210> 561
<211> 425
<212> DNA
<213> Homo sapiens

<400> 561
gaattcggtc aaagaggcct acgaggagaa tggagaccaa acctgtgata acctgtctca 60
aaaccctcct catcatctac tcctttcgtct tctggatcac tggggtgatc ctgttggccg 120
ttggagtctg gggaaagctg actttgggaa cctatatctc cctgattgct gagaactcca 180

caaatgctcc ctatgtgctc attggaaccg gcaccaccat cgtggttttt ggcctctttg 240
gatgctttgc tacatgccgt ggtagtccat ggatgctgaa actgtatgcc atgttcctgt 300
ccctggtgtt cctggctgag cttgttgctg gcatttctgg atttgtgttt cgtcatgaga 360
tcaaggacac cttcctgagg acttacacgg atgccatgca ggactacaat ggcaacgaac 420
tcgag 425

<210> 562
<211> 238
<212> DNA
<213> Homo sapiens

<400> 562
gaattcttca gctgaggaac ggtggtacca ggtgaagaaa atccactttg ggtcccgacg 60
cgactgacaa ggaccgtgaa agagcaagat gaaccccaag atgattctcc tgctcctgat 120
gattgagaca gggataagta tacctttgtg ggccatagta agatcatggc cagtaccttt 180
accggtacat tccaattctt ctaccttgcc tttatttttt gcaacagaaa ctctcgag 238

<210> 563
<211> 359
<212> DNA
<213> Homo sapiens

<220>
<221> unsure
<222> (203)

<400> 563
gaattcggcc aaagaggcct agtttgagca cttcagcctc tttttgtctt gcgtgtttca 60
gatcaacgtc ttcttctaca cagttccatt agccatcaaa ttaaaggagc atccccatctt 120
cttcatgttc attcagattg ccatcatctc tatcttcaag tcctatccaa ctgtgggggga 180
tgtggccctc tacatggctt tcnttccctg tgtggaacca tctctacaga ttcctgcgga 240
acatcttcgt cctcacctgc atcatcatcg tctgctctct ttcttccctg tgtggaacca 300
tctctacaga ttcctgcgga acatcttcgt cctcaccggc atcatcatcg tccctcgag 359

<210> 564
<211> 399
<212> DNA
<213> Homo sapiens

<400> 564
gaattcggcc aaagaggcct agctttggtc tggaccgagc ggggcagcgt cccgggctcc 60
cgagtgtctc ccatggcgga tacgaccccg aacggccccc aaggggcggg cgctgtgcaa 120
ttcatgatga ccaataaatt ggacacagca atgtggcttt ctcgcctgtt cacagtttat 180
tgctccgctc tgttcgttct gcctcttctt gggttgcatg aagcagcgag cttttaccag 240
cgtgctttgc tggccaatgc tctgaccagc gctctgaggc tgcatcagag attacctcac 300
ttccagttga gcagagtgtt cctggctcaq gccttgttag aggacagctg ccactacctg 360
ctgtattcac tcatcttcgt caactcctac cccctcgag 399

<210> 565
<211> 373
<212> DNA
<213> Homo sapiens

<400> 565
gaattcggcc aaagaggcct aggcgacaag agtctggagg tggcggtatg gaatcccatt 60
aaggtgcgat tgggagtgag ccgagtctct ttgaccaggc tagagcgcca gcgctcctct 120
gaaccggcac actttggcaa agttgcaatg gcctgtttgc ttaggcactg aagtggatga 180
tggttaggat gacaacttgc agagaacgcg gatgagacct tcagtttgtg cccacactca 240
tttgcagcaa ccctaacaga gattgtgaag attttcaaag tggggcacct cgatttctcg 300
aatctgtggt gtggcgaata tccgtgttcc tcctgcttaa ctagcctgtt tgaaggcaca 360

gttcattctc gag 373

<210> 566
<211> 133
<212> DNA
<213> Homo sapiens

<400> 566
gaattcgcgg ccgcgtcgac gcctcactca attcatgctt ttctctccag cagtgatgaa 60
ctgctgggct ctgactaaac acttgatgtt atttcaagct gttgaccttt gctcatttct 120
caaccctctc gag 133

<210> 567
<211> 281
<212> DNA
<213> Homo sapiens

<400> 567
gaattcggcc aaagaggcct acttttcccc actgcaaaac caggctcggc ttccctcgtg 60
ctcatctacc tatagtgtat ctgaggtata ttttgcacgt gttttcttac atggtcaata 120
acatgctcgc cctcaccatt tttctcattt tattttcctt tcgccttaat ttatttgcc 180
ttgcactttg cacttgcctg aaagggatga ggataccaaa gggggaaaat tcacctgttt 240
tagggggaaa tttctctatt tttatgaatg gtgcactcga g 281

<210> 568
<211> 624
<212> DNA
<213> Homo sapiens

<400> 568
gaattcggcc aaagaggcct acctcccggc tgctgcgggt gccctggatc cagtcggctg 60
caccaggcga gcgagacccct tccctggtgg aggctcagag ttccggcagg gtgcatccgg 120
cctgtgtgtg gcgcgaggca gggaagccgg tacccgggtc ctggccccag cgctgacgtt 180
ttctctcccc tttcttctct cttcgcggtt gcggcgtcgc agacgctagt gtgagccccc 240
atggcagata cgaccccgaa cggcccccaa ggggcgggcg ctgtgcaatt catgatgacc 300
aataaactgg acacggcaat gtggctttct cgcttgttca cagtttactg ctctgctctg 360
tttgttctgc ctcttcttgg gttgcatgaa gcagcaagct tttaccaacg tgctttgctg 420
gcaaatgctc ttaccagtgc tctgaggctg catcaaagat taccacactt ccagttaagc 480
agagcattcc tggcccaggc tttgttagag gacagctgcc actacctgtt gtattcactc 540
atctttgtaa attcctatcc agttacaatg agtatcttcc cagtcttgtt attctctttg 600
cttcatgctg ccacagcact cgag 624

<210> 569
<211> 467
<212> DNA
<213> Homo sapiens

<400> 569
gaattcgcgg ccgcgtcgac gtgctgggac atgagatgta ttctcttctt tgttcctcac 60
tctatctctg tgggtggaaa aaattactcc catttctatag aagagagacc agaacctccg 120
agaggacaag caactttctt agggggcaca gctaggaggg taggctgaat aatgatcccc 180
ctaaaatgtc cacattctaa tcccaaaaac ttatttaaaa agggactttg caggggtgac 240
tgagttaagg atcctcagat gaggaggttt tcatggattg tttgggtggg cccaatgtaa 300
tccaaggatc ctttcaagag caaggcagga gggccagagt cagagaaaca gacacgacaa 360
tggaagcaga ggttggggtg atactggagt gggaggggcc accagccaag gaatgcaggc 420
agcctctagg agctggaaaa ggcaagaaag catgtttcct cctcgag 467

<210> 570
<211> 269
<212> DNA

<213> Homo sapiens

<400> 570
gaattcgcgg ccgcgtcgac gctgggggaa aaaagaaact aaatcaaata aaaataaatt 60
ttcaaatttc atcaacaagt ggtacattca gtataaaact acaaatgccc atatagatta 120
ttacaaaggt acataccaat caagaactag gcatcacatc caggaactgt gcatacatac 180
taaatcattc attacagatt tttactttat tgtgaagtat attcaataaa atataagtga 240
cagaaatgag aaaatccaca gtcctcgag 269

<210> 571
<211> 208
<212> DNA
<213> Homo sapiens

<400> 571
gaattcgcgg ccgcgtcgac ataaaaagta tagtaaatac ataaaccaat aacatagtca 60
cttattatca ttatcacata ttatgtactg tgcactgttg tacgtgctgt acttttatac 120
agctggcagc acgggtttgt ttgcaccagc atccccacaa acatatgagg aacatgtaca 180
tcttaccacg gttgcaactt cactcgag 208

<210> 572
<211> 178
<212> DNA
<213> Homo sapiens

<400> 572
gaattcgcgg ccgcgtcgac tccctactga agatagcttt gcttgaatga gcttgcctgc 60
agtgcgaatg ctggggctta ttgtgttgac ggcgcagtcg ccatggttgc tgcgtcctga 120
ggacatggtt acttccctga ctatctgtca tgcctcactg gtaccccgta gcctcgag 178

<210> 573
<211> 172
<212> DNA
<213> Homo sapiens

<400> 573
gaattcgcgg ccgcgtcgac tgccagagag tttatagtag ttgaatatgg attatgaaca 60
gttactttta tttttaattt tttgggggac ggaatcttgc tctgtcaccc aggctggagt 120
gcagtggtgc gatctcagct cactgcagcc tctgcctcct gggttcctcg ag 172

<210> 574
<211> 183
<212> DNA
<213> Homo sapiens

<400> 574
gaattcgcgg ccgcgtcgac tgcttttgga ggacagagtg aatttctccc aaattactgt 60
ctttctgcctc ctaaatcagg accacatttt tcaggtgtgc ttatttgggg aacgaggcct 120
ggtctgtgtt ccgctgtatt gctgatgaag ctaaaaatta agggattaat ggcatccctc 180
gag 183

<210> 575
<211> 224
<212> DNA
<213> Homo sapiens

<400> 575
gaattcgcgg ccgcgtcgac cctttttcag tattgtttca ggaaatggta ttgtttgttt 60
ttattttact ttttactgtt tcctgggtac atgaccaatg tcatttgact ggtgagtaca 120
ttgagctagc agctttagag aaatttcatg gtgatctaga gatgcatgac agctccctgc 180

actggcagcc tactttacaa ctaccatctg agaagggact cgag 224

<210> 576
<211> 249
<212> DNA
<213> Homo sapiens

<400> 576
gaattcgcgg ccgcgtcgac cagaaaacca atgtttaaca ttcacagagg atttactgc 60
ttaacagcca tcttgcccca aatatgcatt tgttctcagt tctcagtgcc atctagttat 120
cacttcactg aggatcctgg ggctttccca gtagccacta atggggaacg atttccttgg 180
caggagctaa ggctccccag tgtggtcatt cctctccatt atgacctctt tgtccacccc 240
aatctcgag 249
<210> 577
<211> 251
<212> DNA
<213> Homo sapiens

<400> 577
gaattcgcgg ccgcgtcgac catcctttgg gacttcagtt cctgcttttc tttgtgaatt 60
tttccctatt cgtatcctgt ccatattcct aagcaataca taccgtaggt ttgcctgtat 120
ttaaaagtgg catcatgtcc tttacgttat tccagtttgc tttttgtta ctcagcatta 180
tatcttggga tacatccatg ttgatgcagg cagctgaggc tcatttactt tttcccact 240
gcaaactcga g 251

<210> 578
<211> 161
<212> DNA
<213> Homo sapiens

<400> 578
gaattcgcgg ccgcgtcgac agaggttgtt cgcgccttga gagttaagcg aagtgtggtg 60
gcttccaagg aatacaaaca taaaggcctt cgaccgttgc aaatagacta aagtgaaaac 120
aaatctgaat gaagatgaag ttatttcaga cggttctcga g 161

<210> 579
<211> 173
<212> DNA
<213> Homo sapiens

<400> 579
gaattcgcgg ccgcgtcgac gcacgcactt catctgggcc tgcagtgaaa aagtattcta 60
gttggagtgc tgcaaaccca gccttaatga tctttggcaa agcactttgt gtcatgttcg 120
cttccagata cttctgtctc tcctcagcac tcaattcttg caactgcctc gag 173

<210> 580
<211> 160
<212> DNA
<213> Homo sapiens

<400> 580
gaattcgcgg ccgcgtcgac agatgcccat gaattcttaa attacctact aaatacaatt 60
gctgatattt tacaagaaga gagaaagcag gaaaaacaaa atggtcgttt acctaatggt 120
aatattgata atgaaaataa taacagcaca cccactcgag 160

<210> 581
<211> 262
<212> DNA
<213> Homo sapiens

<400> 581
gaattcgcgg ccgcgtcgac tgaattctag acctgcctcg agccgtgcta ttactttcac 60
ctctttcatt gcttgtggaa aaacccttat ccagggaaga attaataact tcaacaatac 120
tatcaaagga gggcctaaaa ttaaaaaaaa aaaagaaaca aaaaagttgt gaaacaacaa 180
caacaacaat acttggcaaa ctcctgacag acttagggag aatattatga tattgaggct 240
gctgttgact aaggcactcg ag 262

<210> 582
<211> 175
<212> DNA
<213> Homo sapiens

<400> 582
gaattcgcgg ccgcgtcgac ggattcttca ttactacatc tgaaaagctt ctcatctaga 60
aggtatttat ctcaaaattc atttgtgtgt ttcaaacaga atttcacaaa attctggtct 120
ttaacaataa ataatgttga ttctaaacat cagaattgta acaggaatac tcgag 175

<210> 583
<211> 179
<212> DNA
<213> Homo sapiens

<400> 583
gaattcgcgg ccgcgtcgac gagatatctg tatttaaaaa aaaggttttt tttccttaaa 60
tgtgcaaaac agcacagggc agtttagggc tcttcatagc tatcttcatg tacacattta 120
tttggcttac gagcactctt cttcctcagc ttttcccatc ccctatcgcc accctcgag 179

<210> 584
<211> 242
<212> DNA
<213> Homo sapiens

<400> 584
gaattcgcgg ccgcgtcgac aggagctgct gtggagaaag gtatactatg aagttatcca 60
gcttatcaag actaacaaaa agcacatcca cagccggagc actttggaat gtgcctacag 120
gacgcacctg gttgctggta ttggcttcta ccagcatctc cttctctata tccagtccca 180
ctaccagctg gaactgcagt gctgcatcga ctggacccat gtcactgacc cccatgctcg 240
ag 242

<210> 585
<211> 240
<212> DNA
<213> Homo sapiens

<400> 585
gaattcgcgg ccgcgtcgac ccagaaaaga aaagatagtg atttaacaaa cttttcctgc 60
tcacctacat tgtcttcatt catatttatt agaatgacca acatacttta ccattccttc 120
aatcacttta atttcattat gtttggttaa ttttttcttct tgataaacca gttgtccctc 180
agtatactcc agggattcat tccaggagca cctgtgtata ccataattca cacactcgag 240

<210> 586
<211> 177
<212> DNA
<213> Homo sapiens

<400> 586
gaattcgcgg ccgcgtcgac cactttcact gggccagaca gaaaacaaga aatctttttt 60
gtgttggcaa atcaaagagg catgcttttta cagaaacttg ctttgcagat tcttcaccct 120
gtgctggtca tgatacttttc agctccatac caaggagggg taaaatacac tctcgag 177

<210> 587
<211> 147
<212> DNA
<213> Homo sapiens

<400> 587
gaattcgcgg ccgcgtcgac gatttttctg gggggaggat tggtttatgg aacgaattat 60
ttcttatttt tcatggcaac ctacaaattg acttcctttg ttctcatcac cgtctttgtt 120
gttagaatat gttcagagag tctcgag 147

<210> 588
<211> 288
<212> DNA
<213> Homo sapiens

<400> 588
gaattcgcgg ccgcgtcgac accaaataga actgtaaaca gtttgtcaac taataagctg 60
aatttctggt tgaagtacag ttggaacagg ttatctccac atttgggtct tttacctctt 120
agcatagtgt gatttctttc ctcttttttta aaaatccacc tccttcctct ctagcatagt 180
gtgatttctt taaatctttt ttatcctatg ctaaatgtat gggtttttttg tttgtttgtt 240
tggtctcact ctgtcaccca ggctgaagtg ttcagtggcc gtctcgag 288

<210> 589
<211> 210
<212> DNA
<213> Homo sapiens

<400> 589
gaattcgcgg ccgcgtcgac cttcatgatc tggtcttacc tctcaggact ccccccatcc 60
ttaccattgt ttgttgatct ctggtgcagc caaatgaagc ccatcatgct tgtcctctgc 120
ctggaagctc ttccttccct cttcctggcc aatggctact gtcccttcag agcacctgtt 180
cagatgaaac ctccaccaag caccctcgag 210

<210> 590
<211> 229
<212> DNA
<213> Homo sapiens

<400> 590
gaattcgcgg ccgcgtcgac ccgggtagta ttccatcata tatatataat cagatatata 60
tacataatca gatatatata tatataatca gatatatata tatcagtttc tttatccact 120
catttgcaat tatttaattt ttaaataaaa cactttataa acacataaaa ttatgagatc 180
tctagttata tttctcatgc taagccactg tgcttacccc tgcctcgag 229

<210> 591
<211> 152
<212> DNA
<213> Homo sapiens

<400> 591
gaattcgcgg ccgcgtcgac ctccattctt tcatgtgtag gtttaatatt gtggacccaa 60
tctgtgttct ggtaatggaa ttaatttgga taacatcatt agggctgggc acagttgctc 120
atgcctataa tcccagcact gaaagctcg ag 152

<210> 592
<211> 175
<212> DNA
<213> Homo sapiens

<400> 592

gaattcgcgg ccgcgtcgac caaagattcc tacccaatcg tgtacacact gtctctaatc 60
tcctctcttt gcttggcctg gacctgtgaa tatgataatc acgcccttga ctgctttact 120
tagtatagga ctccatttta gcagaatgaa gagtgtttcc cctactgatc tcgag 175

<210> 593
<211> 235
<212> DNA
<213> Homo sapiens

<400> 593
gaattcgcgg ccgcgtcgac tctgtattct aatgaatagt aatagctgac attaatgaga 60
actgtatttc agacaccgtg ctaagttctt ttcatgtatt atctcattta atctttgtaa 120
caaattgatg aggtgggtca tatttttatt tatttattta tgtttgagac agggtcttgc 180
tctgtctgct aggctggagt gcaatggagc tatcactcct cactgcagcc tcgag 235
<210> 594
<211> 244
<212> DNA
<213> Homo sapiens

<400> 594
gaattcgcgg ccgcgtcgac aaatctatca gtgcagtata tatacaacct tgtcagacga 60
gtagctgaca aaggaatctc cctagtacaa cttgtagcag tactattata aagaattcct 120
gacttgacac atttgatga agttggttga aataatttgt tgggtttgtt caatttttgg 180
tgtcatttat ataaaaagaa taaagaagaa tgtgaatggt aggaagtcag gcgagatgct 240
cgag 244

<210> 595
<211> 229
<212> DNA
<213> Homo sapiens

<400> 595
gaattcgcgg ccgcgtcgac tgatggttct cctgtacccc agggcatggc cctgtatgca 60
ccacctcctc ccttgccaaa caatagccga cctctcaccc ctggcactgt tgtttatggc 120
ccacctcctg ctggggcccc catggtgtat gggcctccac cccccaactt ctccatcccc 180
ttcatcccta tgggtgtgct gcattgcaac gtcccagaac accctcgag 229

<210> 596
<211> 218
<212> DNA
<213> Homo sapiens

<400> 596
gaattcgcgg ccgcgtcgac gagaattgtt tttagcagag tttgtgacca aagtcagagt 60
ggatcatggt ggtttggcag cagggaattt gtcttgttgg agcctgctct gtgctcccca 120
ctccatttct ctgtccctct gcctgggcta tgggaagtgg ggatgcagat ggccaagctc 180
ccaccctggg tattcaaaaa cggcacacac aactcgag 218

<210> 597
<211> 153
<212> DNA
<213> Homo sapiens

<400> 597
gaattcgcgg ccgcgtcgac ttctagacct gcctcgagca aataaaaaac ccagttctaa 60
atcataaaaa tagaagaccc agttctagtc atgtggcatt catttatctt ttggggaatg 120
tccctcctat gcctttgtag aacacaactc gag 153

<210> 598
<211> 194

<212> DNA
<213> Homo sapiens

<400> 598
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<211> 232
<212> DNA
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gtggtatgtg tgctgcgata ctttgaagca gaatgatttg tggatcattt taccagtcct 180
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<211> 227
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<213> Homo sapiens

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tggaatcact gaatcttttt catctcctat tcagaataca tctgcttcct gctttcacaa 180
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<211> 198
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atgttcaagg ttttatactt tgtcaaggct gttttcatta ttcacgtgtt aaaagtgaca 180
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<210> 602
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<212> DNA
<213> Homo sapiens

<400> 602
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taatttagcc caaaaagtgc cgagaaggag ttgggagtgg actccaatct gttatgaaag 180
tgagacaaac attcttgttc cttctgatcc ctttcagtag cagttctctc gag 233

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<212> DNA
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<211> 193
<212> DNA
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<400> 605
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acaagctgct ggcggaggcg ctggagtcgc agaccctgtt ggggccgctc gag 173

<210> 607
<211> 310
<212> DNA
<213> Homo sapiens

<400> 607
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<211> 189
<212> DNA
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agcctcgag 189

<210> 609
<211> 188

<212> DNA
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<400> 609
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gctgggcatg gtggctcctg cctataatct cagaactttg ggaggctgag gcaggcagat 180
cactcgag 188

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<212> DNA
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<210> 612
<211> 152
<212> DNA
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<400> 612
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<210> 613
<211> 194
<212> DNA
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gcaacacact cgag 194

<210> 614
<211> 258
<212> DNA
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<400> 614
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<210> 615
<211> 188
<212> DNA
<213> Homo sapiens

<400> 615
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<210> 616
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<212> DNA
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<400> 616
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gtgggttagg gcaaggccct gccctcgag 149

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gggacgactc gag 193

<210> 618
<211> 233
<212> DNA
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<210> 619
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ctttatagat tggtgtcctg ggtattgcct agctgaccct tccctaatct tccccgcggc 180
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<210> 620
<211> 187
<212> DNA

<213> Homo sapiens

<400> 620
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ataacattta ttttctagtg tattgcagta atcattcttc ttttttttaa atttctaagc 120
tgttttatta aatgaaaaga gaacaatgct aagcagcttg tatggtgtgt gtgttgtgtg 180
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<210> 621
<211> 170
<212> DNA
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<400> 621
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tatttatgct gttaccttac tatcttttta atatccgtta tggtctcgag 170

<210> 622
<211> 247
<212> DNA
<213> Homo sapiens

<400> 622
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ttattggtgg tttaatttaa atacattttt ttctctacag attagtgcaa accagtctgc 180
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tctcgag 247

<210> 623
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<212> DNA
<213> Homo sapiens

<400> 623
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tataatgata ccacgtagat tccagtactt gttaacagtt tgccatattt gcttcgtctg 180
tgtgtctttt cggaaccatt tgaaaattgt agatatgaca tttcacccca acacccagct 240
cgag 244

<210> 624
<211> 135
<212> DNA
<213> Homo sapiens

<400> 624
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gtgcagataa tccgaacact tatagttcat ttattgtttc caccctccca ctctgcacat 120
gactgttatc tcgag 135

<210> 625
<211> 140
<212> DNA
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<400> 625
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